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ABSTRACT

This guide deals with various aspects of sports and nutrition. Twelve chapters are included: (1) "Sports and Nutrition"; (2) "Eat to Compete"; (3) "Fit Folks Need Fit Food"; (4) "The Food Guide Pyramid"; (5) "Fat Finder's Guide"; (6) "Pre- and Post-Event Meals"; (7) "Tips for the Diabetic Athlete"; (8) "Pinning Down Your Optimal Weight"; (9) "Pills, Powders and Potions"; (10) "Steroids in Sports"; (11) "Meals On-the-Go"; and (12) "Eating Disorders." Appendices provide special resource guides on sports nutrition, anorexia nervosa and bulimia, and weight control and obesity. Also included are handout masters on the following topics: sports nutrition tips; top sports foods; sample high carbohydrate restaurant meals; foods highest in carbohydrates; the pre-competition meal; fluids, dehydration and thirst quenchers; how to lose weight and maintain energy; and how to handle eating disorders. (ND)

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SPORTS NUTRITION

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Foods Highest in Carbohydrates
The Pre-Competition Meal
Fluids, Dehydration and Thirst Quenchers
How to Lose Weight and Maintain Energy
How to Handle Eating Disorders

Sports and Nutrition

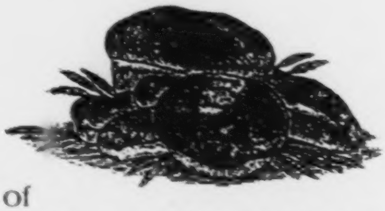
Good nutrition is necessary for peak athletic performance. However, the basic dietary requirements for athletes are no different from those of the non-athlete, with the exception of an increased need for calories and water. There are *no special foods, food regimens or vitamin supplements that enhance athletic performance.*

Every athlete searches for that competitive edge—the one factor that may make the difference between first and second place. This makes athletes particularly susceptible to nutrition fads.

Metabolic magic doesn't exist! Promises about vitamin and protein quick-energy supplements, crash diets, and fluid replacements made by health food promoters are mainly untrue. As long as the 50 or so basic nutrients, and enough calories, are included in the daily eating pattern, optimum performance is possible. *Practice* and *commitment* make the difference.

Food provides energy in the form of calories supplied by carbohydrates, fat and protein. Vitamins, minerals and water do not supply energy but help the body utilize the food nutrients. To maintain weight, athletes often need more calories than sedentary persons. Proper energy intake, along with adequate amounts of all other nutrients, can be obtained through wise food choices.

Energy



Carbohydrates are the ideal fuel for most body functions and the best source of energy for muscles that are strenuously exercised. Carbohydrates are stored in the muscles and liver in the form of *glycogen* and in the blood in the form of *glucose* (blood sugar). This energy is instantly available as the body's first source of energy. Carbohydrates provide four (4) calories per gram and include sugars, starches and digestible fibers which are broken down during digestion into glucose. Glucose is the form of carbohydrate used for energy in the body cells. Complex carbohydrates (starches) such as bread, cereal, fruits and vegetables are better choices than simple carbohydrates (sugar)s, honey and syrup because they are slower to digest and contain fiver and essential vitamins.

Strength

Protein provides four calories per gram and is found throughout the body. It is necessary for building and maintaining body cells. Since cells are being replaced continually, protein is needed during the entire life cycle. Protein foods are not good sources of energy during exercise. The average American diet provides two to three times the recommended amount of protein. Some athletes believe eating large amounts of protein by itself will increase muscle mass and strength. *This is not true!* Muscle mass is increased through physical training. While protein is used to make muscle tissue, muscles do not get bigger unless the body has enough male hormones circulating in the blood. As long as two servings of meat or meat substitutes are eaten each day there is no need to increase protein intake. *Remember: excess protein is changed to fat by the body for storage.*

Four ounces of protein, such as a quarter-pound cooked hamburger or a medium piece of chicken, plus three or four servings of milk, yogurt or cheese, can supply all the protein needed for the entire day. Some examples of protein from animal sources are beef, lamb, pork, fish, chicken, turkey, eggs, cheese and milk. Examples of vegetable protein are peanuts, nuts, dried beans, dried peas and grains.

The use of protein formulas or supplements has been extensively researched and they have not been shown to be of benefit to the athlete. Excessive protein may cause stress on the kidneys, digestive upsets, diarrhea, and loss of appetite.

Hydration

Water is the most critical nutrient for the athlete. Drinking too much water is almost impossible as the kidneys will excrete the extra. Drinking too little water, however, is very common and can decrease performance or damage the body. During exercise, drinking a fluid eight ounce cup of water every 20 minutes is ideal. This amount can be absorbed.

After exercise, drink to quench thirst, then drink even more. Thirst does not sufficiently indicate your need for fluids. Water is necessary for controlling body temperature. If lost, water is not replaced, the dehydrated athlete may suffer from heat exhaustion or heat stroke. Drinking water *before, during and after* an event easily prevents dehydration. Two cups of water are needed to replace every pound of weight lost in practice or competition. Water does not provide energy but carries nutrients to and waste away from cells.

Vitamins and Minerals

It is important for the athlete to meet vitamin and mineral requirements. However, physical activity does not increase the need beyond what is supplied by food. As activity is increased so is the need for an increase in food. Thus, the increased vitamin and mineral needs are met by diet rather than supplements. The loss of sodium and potassium are affected by heavy sweating, but sodium is plentiful in our diet. The use of salt tablets is not recommended. Potassium can be supplied by including foods in the diet such as bananas, citrus fruits and juices, dried fruit, milk and potatoes.

QUESTIONS & ANSWERS

Eat To Compete

Does nutrition affect performance?

Nutrition can impact performance in a variety of ways. Over 50 nutrients are needed by the body. Omission of any one of these over a period of time can harm your health and may hinder performance. Good nutrition will not work overnight miracles such as shaving half a second off your 100-meter-dash time, but proper nutrition throughout the year can make a difference. By staying healthy and decreasing *down time*, the athlete will feel better, train harder and keep in better condition. This could mean the difference between winning and losing.

What is the best diet for an athlete?

There is no one perfect diet. Each athlete is different and has individualized needs. A 98 pound gymnast, for example, should eat differently than a 250 pound weightlifter. The best diet is one that keeps the body well hydrated, provides adequate calories, and supplies the 50 plus nutrients in the needed amounts. No single food or supplement can do this. This is best achieved by consuming a wide variety of foods on a daily basis.

What should an athlete eat to increase strength?

The most important factor for increasing strength is not what you eat, but rather how you train. Strength can be gained only after a period of progressive resistant weight training. How much strength actually gained depends on the intensity and type of weight training. It is commonly thought that large amounts of protein or amino acids are necessary to add muscle mass. Although protein is a component of muscle, muscle is mostly water and only 20 to 22 percent protein. An adequate protein intake is certainly important in gaining strength and muscle, but so is the intake of other nutrients, including carbohydrates and various vitamins and minerals. While protein is used by the body to make muscle tissue, eating large amounts of protein does not lead to the development of larger, stronger muscles. Additionally, if calorie intake is inadequate, the protein eaten will be used for energy instead of building muscle tissue. The athlete who cuts back on food to lose weight and then takes vitamin and mineral pills may be getting more than the needed amounts of vitamins and minerals, but will not be able to increase or even maintain muscle mass. An adequate diet is essential to maintaining energy levels, developing muscles and increasing endurance and strength.

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Are there nutrients that are more important than others?

Yes. The most important nutrient is the one most often overlooked - *water*! Why is water so important? Because the body is approximately 60 to 70 percent water. Humans can go weeks and even months without certain vitamins or minerals before noticing an effect, but without adequate water, performance can be affected in less than an hour. Water is necessary for the body's cooling system. It also transports nutrients throughout the tissues and maintains adequate blood volume. Dehydration can cause the body to overheat. Small unreplaced fluid losses can impair performance and large unreplaced losses can cause heat stroke and even death.

How much water is enough?

If you wait until you are thirsty to drink, you have waited too long! During intense exercise the body's thirst mechanism lags behind actual need. It is important to make a conscious effort to drink water before getting thirsty. Actual requirements will vary depending on the temperature and humidity, the intensity of the workout or event, and how well the body is acclimated. The most reliable indicator of how much water is needed, is weight. In hot and humid weather, athletes can sweat off 6 pounds per hour! Each pound of weight lost as sweat is equal to two cups of water. It is important to weigh, nude or in minimal clothing, before and after exercising to estimate fluid loss. For each pound lost, two cups (16 ounces) of fluid is needed before exercising again. If more than two percent of the body weight is being lost, drink more water immediately. *All athletes should drink water before, during, and after workouts and competition events.*

THIRST QUENCHERS			%USA RDA			
Fluid, amount	**Calories**	**Carbohydrates**	**C**	**B12**	**A**	**Calcium**
Cola, 8 oz.	100	25	0	0	0	0
Gatorade, 8 oz.	40	10	0	8	0	3
Orange juice, 8 oz.	105	26	200	3	5	3

Nutrient Data - *Bowes and Church's Food Portions Commonly Used.*

What about using sport drinks for fluid replacement?

Sport drinks are fine to use as a fluid replacement after training or competition is over; however, caution should be used if they are consumed immediately before or during a competition. Sport drinks contain sugar and electrolytes. Sugar consumed during the 1 1/2 hours prior to an endurance event, which is longer than 90 minutes of continuous non-stop effort, can increase the rate at which the body uses glycogen. However, after the first 30 minutes of an endurance activity, consuming a weak sugar solution may help prevent low blood sugar and help performance. Water is the best replacement fluid for athletes, although endurance athletes may benefit from the sugar content of sport drinks or diluted sweetened fruit flavored drinks consumed during the activity. Soft drinks lack adequate fluids and carbohydrates, vitamins and minerals.

Do athletes need to worry about getting enough sodium, potassium and other electrolytes lost in sweat?

Replacement of electrolytes is important because they are involved in fluid balance, nerve conduction and muscle contraction. Do not worry about replacement until after exercise. Sweat contains small amounts of the electrolytes and actually has less concentration of electrolytes than do other body fluids. When sweating the body loses a lot more water than electrolytes. During exercise, water replacement is the main concern. After exercise, electrolyte replacement is easily achieved by a normal diet. Most people eat more than twice the recommended amount of daily sodium. *Salt tablets should never be taken by athletes.* Potassium replacement is not a problem if the diet includes fruits and vegetables. Citrus fruits and juices such as oranges, grapefruits, dried fruits, bananas, potatoes, tomatoes and milk are excellent sources of potassium.

FLUID REPLACERS

Drink per 8 oz.	Calories	Potassium (mg)	Sodium (mg)
Gatorade	50	25	110
Coke	95	0	8
Pepsi	100	8	6
Orange Juice	110	475	2
Apple Juice	115	300	5
Grape Juice	155	335	5
Orange, 1 large	120	440	0
Possible loss in a 2 hr. workout:	1,000	180	1,000

Nutrient Data - *Bowes and Church's Food Portions Commonly Used.*

Do athletes need more vitamins and minerals than non-athletes?

Several of the B vitamins are involved in the process of converting food to energy, but amounts above what is needed will not speed up the process. Taking large doses of vitamins is similar to trying to make your car run faster by putting seven spark plugs under the hood of a six cylinder car. Intakes above and beyond the Recommended Dietary Allowances (RDAs) are not necessary and in fact high levels of some vitamins can be toxic. Toxicity and side-effects involving large amounts of certain vitamins and minerals are well documented. For example, the RDA for vitamin A is 1,000 retinol equivalents (RE) for men and 800 RE for women. As little as five times these amounts can cause toxic reactions. This amount is not uncommon in over-the-counter supplements. Vitamin A toxicity can result in dry flaky skin, severe headaches, bone and joint pains, and even liver damage. Overdoses of niacin, vitamin B6, vitamin C, vitamin D, iron, magnesium, zinc have also been shown to be harmful.

Is extra protein needed for weight lifting?

More protein may be needed by the body when weight lifting, but this does not mean the athlete needs to increase protein intake. Excess protein is already part of the American diet which contains 80 to 150 grams of protein daily. One pound of muscle is approximately 70 to 75 percent water, 20 to 22 percent protein, and 5 to 7 percent other material such as fat, glycogen, minerals, and enzymes. So one pound of muscle contains approximately 70 to 105 grams of protein. If one pound of pure muscle is put on in two weeks, this would mean 5 to 8 grams of protein a day above the RDA of 60 to 65 grams. One additional ounce of meat or cheese a day or an extra glass of milk will be more than enough to add additional protein if needed.

Should we eat extra protein to make sure of enough?

Extra protein does not build muscle bulk; exercise does. To build and strengthen muscles, resistance exercise needs to be a part of a workout program.

To have sufficient energy for muscle-building exercise a diet needs to be about 15 percent of calories from protein.

Protein Needs

- **A 150 pound runner might eat 2,600 calories: 15% x 2,600 = 390 protein calories or 97.5 grams**
- **A 200 pound body builder might eat 3,600 calories: 15% x 3,500 = 540 protein calories or 135 grams**

The body cannot store protein: It must either *use it or lose it.* If more protein is eaten than the body can use, it is broken down and either used for energy or stored as body fat. The nitrogen part can be toxic to the body in excess amounts. Large amounts of protein can lead to dehydration, cause stress to the kidneys and liver, prevent absorption of calcium, and may cause painful gout-like symptoms in the joints.

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What about amino acid supplementation?

Amino acids are the individual units of protein, much like the individual links of a chainlink fence. They have become popular among strength-training athletes and are often taken because the athlete has been told amino acids will stimulate an anabolic effect, increase the rate of muscle gain, or cause weight loss. The amino acids can be taken individually or in various combinations. One example is a combination of arginine and ornithine which is sold as a *natural steroid*. Another formula containing arginine and lysine is sold to cause weight loss. Arginine and lysine are amino acids found in foods. Ornithine is formed in the body as arginine is metabolized. The body cannot tell the difference between amino acids found in pills or powders and the amino acids in foods. They are metabolized by the same processes.

The body needs 20 amino acids to synthesize tissue proteins. Nine of these must be obtained in the diet and 11 are produced by metabolism in the body. The most efficient way to obtain these amino acids is from the protein in foods. There is no scientific evidence to show that amino acids taken either individually or in groups are more effective at adding muscle or weight than protein from food. Problems which can result from use of amino acid supplements are similar to those of protein supplements, including dehydration and calcium losses. Additionally, too much of one amino acid may hinder the absorption of another, in effect slowing down the muscle-building process.

Should athletes eat a lot of carbohydrate?

When your muscles are working they use fat and glycogen for the energy they need. Glycogen is a storage form of carbohydrate which your body makes from the carbohydrate you eat. Current dietary guidelines recommend obtaining 55 to 60 percent of energy from carbohydrates, especially complex carbohydrates. Scientists classify carbohydrates into two categories: simple and complex. Sugars are called simple carbohydrates and occur naturally in fruits, vegetables, milk and other foods. Complex carbohydrates are found in grain foods, fruits and vegetables. Included in this category are starches and dietary fiber. Whole-grain breads and cereals, beans and peas, fruits and vegetables are generally low in fat and rich in fiber. The food label lists the amount of "total carbohydrates."

Does training increase the amount of glycogen stored?

Yes, a trained athlete has more than twice the glycogen stores as a sedentary person, hence has greater endurance. This partially explains why athletes can exercise longer and harder at the end of the season, as compared to when they first start. Athletes who adequately train can stimulate the muscle's ability to store more glycogen. Eating and drinking carbohydrates as soon as they can be tolerated is important. This is when muscles are most receptive to replacing the depleted glycogen stores. Carbohydrates in drinks are perfect for the recovery period. Fruit juices are a recommended recovery drinks.

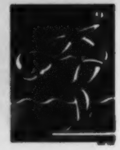
What is carbohydrate loading?

Carbohydrate or glycogen loading is a technique of diet and exercise manipulation. When properly performed, glycogen loading can increase muscle glycogen levels. The earliest method of glycogen loading included a depletion phase on a very low carbohydrate, high protein, high fat diet followed by a three day loading phase on a very high carbohydrate diet. The depletion phase of this diet was very difficult to follow, often causing nausea and disrupting normal training. The latest research on carbohydrate loading has shown that the depletion phase is not needed and that maximum glycogen stores can be achieved by following a normal mixed diet the week prior to competition. This phase is followed with three days of heavy training. Four days before competition follow a high carbohydrate diet combined with tapering the exercise level for three days. A total rest the day before the competition or event, must be followed. Carbohydrate *loading is not recommended for teenage athletes.*

What food should be eaten before competition?

What is eaten immediately prior to competition will, in most cases, still be in the digestive tract during competition and consequently have little effect on performance. The only hard and fast rule for this meal is that it should do no harm. Most precompetition meals provide a psychological boost rather than a physical boost. Because of nervous tension, some people will respond differently to precompetition meals. For some, the meal combined with tension may cause diarrhea, while for others the meal may just set in the stomach and cause a heavy feeling. However, some athletes can eat a heavy meal just before performing a personal best. *Experience is the best guide.* Prior to competition is never the time to experiment with foods. Familiar food and beverages should be eaten at this time. This is especially important when traveling. New foods can play havoc with the digestive tract. Each person has unique food preference, so no one food or magic meal will ensure top performance for everyone.

Fit Folks Need Fit Food



Good Eating Habits Can Make a Difference in Performance

WHAT?	WHY?	HOW?
Fluids	Fluid intake should be increased. The most important concern for an athlete is getting enough fluids. Without water the body cannot function properly, and this loss affects an athlete's performance. Water is the best fluid for replacing sweat loss. One should drink water before, during, and after strenuous activity.	Drink more fluids. Increasing your intake of fluids is easy. • Have fruit juice available in the refrigerator to drink as a snack. • Have a glass of orange juice for breakfast. • Drink a glass of juice or water before going to bed. • Drink a glass of low-fat milk, fruit juice, or water at every meal. • Carry water, low-fat milk, or juice on bike trips or in your school lunch. • Make sure that during sports practice there is a drinking fountain or a container filled with fluids nearby—and drink frequently.
Calories	Athletes need more calories, and the amount depends on how strenuous the activity is.	Extra calories should be supplied with complex carbohydrates.
Complex carbohydrates	Complex carbohydrates should be increased to meet a person's increased need for calories. Complex carbohydrates are the best fuel sources for athletes.	Eat more complex carbohydrates. To increase the variety of complex carbohydrate foods in your diet, do the following: • Start the day with some hot or cold whole-grain cereal, like oatmeal or shredded wheat. Add low-fat milk and top it with fresh fruit or raisins and nuts. • Eat whole wheat toast with a little margarine, some fresh fruit, and orange juice for breakfast. • For lunch fill a plastic bag with fresh raw vegetables such as broccoli, celery, spinach, cabbage, carrots, or zucchini. Eat these vegetables with cheese chunks and a whole wheat muffin. • Use whole wheat bread when you make a sandwich. • For dinner eat different kinds of beans. Add beans (kidney, garbanzo, and green) to your regular salad; make homemade vegetarian chili using kidney beans; add beans to your homemade soups; or use beans as a side dish. • Try using brown rice or bulgur. It is great in a casserole with chicken, fish, or vegetables.
Simple carbohydrates	It is best to avoid concentrated sweets. They are loaded with calories but do not have much in the way of nutrients. Eating concentrated sugary foods 30 to 40 minutes before an activity may lead to fatigue and a feeling of heaviness just when you want to perform. Fresh fruits contain simple carbohydrates, but they also contain vitamins and minerals. The quantity of fresh fruits in your diet should be increased.	Eat more fruit. • Use fruit as a dessert. This is one way to cut back on sugary desserts. • Top breakfast cereal with nuts and raisins. • Take apples, bananas, or oranges with you as a snack.

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WHAT?	WHY?	HOW?
Protein	Athletes' protein needs are the same as everyone else's, and the typical American diet contains plenty of protein. Stocking up on protein, such as taking protein supplements, will not do much good. Try to substitute low-fat protein foods for high-fat protein foods.	Eat low-fat protein foods. Examples are roasted or baked chicken, turkey, and fish; lean meats (like flank steak); low-fat and nonfat milk products and yogurt; and all bean and soy products not marinated in an oil base.
Fat	Fatty foods should be eaten in moderation and also should be avoided before athletic activity.	Eat fewer fatty foods. Have you been eating too much fat? If so, there are quick ways to cut down. Here are some suggestions: • Bake roast, or broil foods. For example, a baked chicken leg contains roughly 20 percent fat while the same piece of chicken fried contains about 40 to 60 percent fat. • Trim fat off meat so there is little or no visible fat left. • Substitute low-fat food snacks for potato chips, corn chips, and candy bars. Use fruit, celery, and carrot sticks, raisins, green and red peppers, cauliflower, cherry tomatoes, radishes, or zucchini. • Minimize visits to fast-food restaurants.
Vitamins and Minerals	A balanced diet usually will supply all the vitamins and minerals people need for health and fitness. Supplements are not necessary. Care should be taken to include foods high in iron.	Eat foods containing more vitamins and minerals. Do you need to increase your vitamin and mineral intake? You have already done it! By increasing your intake of a variety of complex carbohydrate foods and fruit, as well as decreasing your intake of sugary and fatty foods, you will already be increasing your intake of some vitamins and minerals. Consume more iron. You should pay attention to your iron intake. The following are *animal sources of iron:* • Meat, poultry, fish (3 oz.): Lean meats, organ meats (like liver), turkey (dark meat), shrimp, oysters, sardines, or clams. The following are *plant sources of iron:* • Beans, fruits, and vegetables (½ cup): Baked beans, dry beans, spinach, peas, broccoli, mustard greens, collards, potatoes with skins, apricots, raisins, peanut butter, prunes, wheat germ, or molasses (as in gingerbread)
Salt	Salt tablets are not necessary. Salt tablets may cause cramps or dizziness. There is enough salt in a normal diet.	

Source: *California Networks Newsletter, May 1994*

How to Make the Pyramid Work for You

The Food Guide Pyramid

The Pyramid gives a range of servings for each major food group. The number of servings that are right for you depends on how many calories you need, which in turn depends on your age, sex, size, and how active you are. Almost everyone should have at least the lowest number of servings in the ranges.

The following calorie level suggestions are based on recommendations of the National Academy of Sciences and on calories intakes reported by people in national food consumption surveys. The amounts for 2,800 calories is about right for teenage boys, many active men and some very active women.

How much fat can I have? It depends on your calorie needs. The Dietary Guidelines recommend that Americans limit fat in their diets to 30 percent of calories. This amounts to 53 grams of fat in a 1,600 calorie diet, 73 grams of fat in a 2,200-calorie diet. You can get up to half this fat with the lowest fat choices from each food group.

Food Group Age Group 11-24 yrs.	**Basic Diet Servings 1,600 calories**	**Training Diet Servings 2,200 calories**	**Training Diet Servings 2,800 calories**
Milk Group Milk, cheese, yogurt, cottage cheese, ice cream calcium, riboflavin, protein	2 to 3	3	3 or more
Meat Group Meat, fish, poultry, eggs, dried beans and peas, nuts protein, niacin, iron, thiamin	2 or more for a total of 5 ozs.	2 or more for a total of 6 ozs.	3 or more for a total of 7 ozs.
Vegetable Group vitamin A, vitamin C	3	4	5
Fruit Group vitamin A, vitamin C	2	3	4
Grain Group Cereals, Breads, rolls pasta, muffins, pancakes, grits carbohydrate, thiamin, iron, niacin	6	9	11

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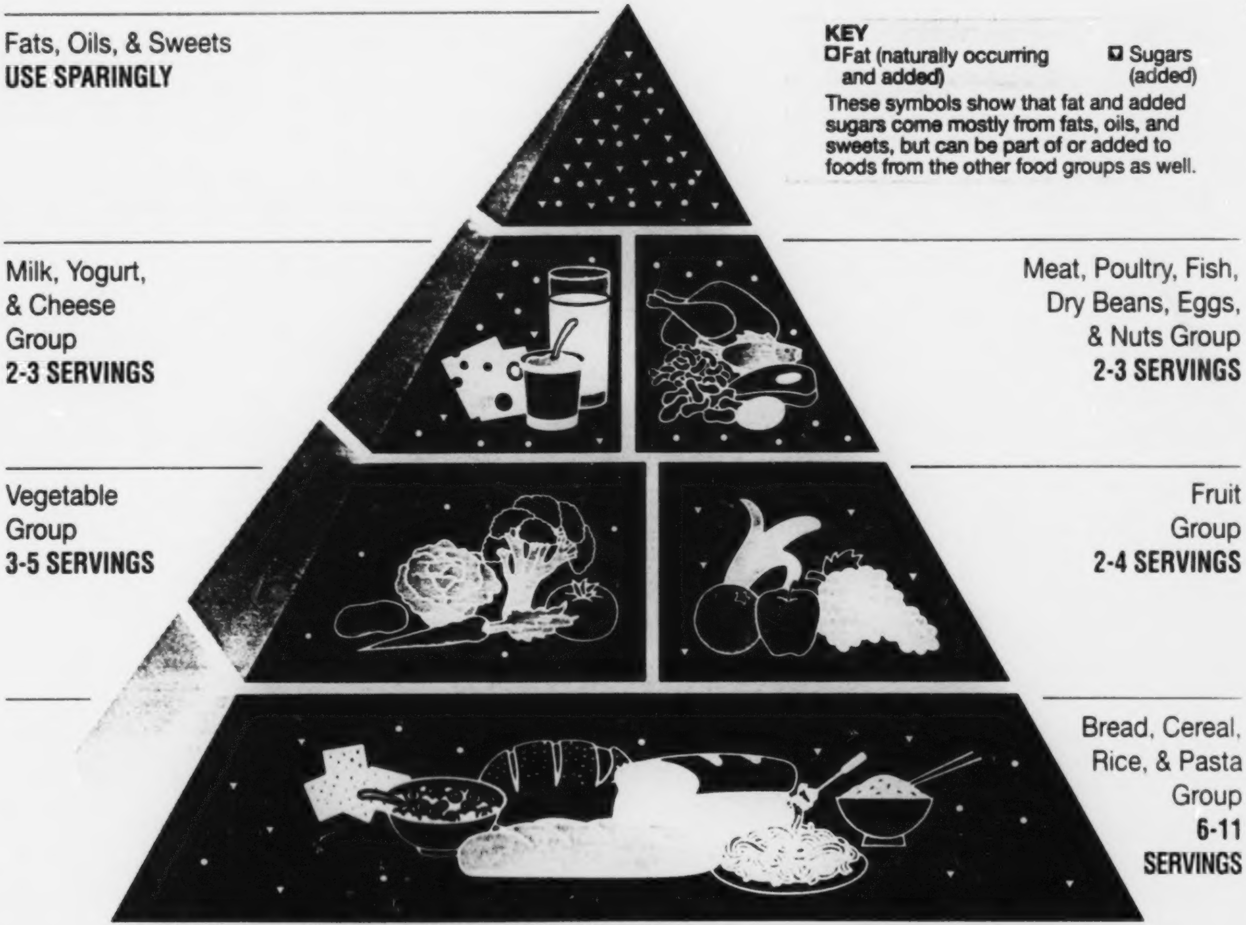
Food Guide Pyramid

A Guide to Daily Food Choices


Fats, Oils, & Sweets
USE SPARINGLY
KEY
☐ Fat (naturally occurring and added)
▣ Sugars (added)
These symbols show that fat and added sugars come mostly from fats, oils, and sweets, but can be part of or added to foods from the other food groups as well.
Milk, Yogurt, & Cheese Group
2-3 SERVINGS
Meat, Poultry, Fish, Dry Beans, Eggs, & Nuts Group
2-3 SERVINGS
Vegetable Group
3-5 SERVINGS
Fruit Group
2-4 SERVINGS
Bread, Cereal, Rice, & Pasta Group
6-11 SERVINGS

SOURCE: U.S. Department of Agriculture/U.S. Department of Health and Human Services

Use the Food Guide Pyramid to help you eat better every day. . .the Dietary Guidelines way. Start with plenty of Breads, Cereals, Rice, and Pasta; Vegetables; and Fruits. Add two to three servings from the Milk group and two to three servings from the Meat group.

Each of these food groups provides some, but not all, of the nutrients you need. No one food group is more important than another — for good health you need them all. Go easy on fats, oils, and sweets, the foods in the small tip of the Pyramid.

Fat Finder's Guide

Some foods are more fat than carbohydrate or protein. Calories from these foods add up quickly.

Food	Amount	Total Calories	Calories from Fat	% Calories from Fat
Butter	1 tsp.	36	36	100
Margarine	1 tsp.	34	34	100
Oils	1 tsp.	40	40	100
Solid Shortening	1 tsp.	35	35	100
Bacon	1 strip	35	28	80
Hot Dog	1	145	118	81
Sausage	1 link	265	194	73
Peanut Butter	1 Tbsp.	95	74	78
Mayonnaise	1 Tbsp.	99	99	100
French Dressing	1 Tbsp.	67	58	87
Blue Cheese Dressing	1 Tbsp.	77	72	94
Half & Half	1 Tbsp.	20	15	75
Whipping Cream	1 Tbsp.	52	50	96
Cream Substitute, dried	1 tsp.	11	6	55
Sour Cream	1 Tbsp.	26	23	88
Cream Cheese	1 Tbsp.	50	45	90
Almonds	1 oz.	167	133	80
Peanuts	1 oz.	161	126	78
Pecans	1 oz.	190	173	91
Olives	4	30	29	97
Sweet Roll	1	154	61	40
Doughnut, chocolate covered	1	129	76	59
Cake, chocolate, 1 layer	1/8 cake	185	80	43
Fruit pie	1/8 pie	282	107	38
Chocolate Bar	1 oz.	160	85	53
Ice Cream	1/2 cup	134	64	48
French Fries	Reg. fast food	220	104	47
Gravy, brown, homemade	1/4 cup	164	126	77
White Sauce	1/4 cup	107	73	68
Coconut	2 Tbsp.	53	32	60

How to determine the percentage of calories from fat (ea. gram of fat has 9 calories)
Food item:

Serving size: ________________

Calories per serving: ________________

9x ____ grams of fat = ____ calories from fat

____ calories from fat divided by ____ calories per serving =

____ % calories from fat

Pre-and Post-Event Meals

The pre-competition meal is important because it:

- Helps prevent hypoglycemia (low blood sugar) with its symptoms of light-headedness, fatigue, blurred vision and indecisiveness.
- Helps settle the stomach, absorb some of the gastric juices and abate hunger feelings.
- Fuels the muscles, particularly with food eaten far enough in advance to be digested and stored as glycogen.
- Pacifies the mind with the knowledge that the body is well fueled.*

(* Adapted from Nancy Clark's Sports Nutrition Guidebook, p. 114)

Athletes are not above believing that a *lucky charm* might help their performance. For some, eating a particular food before competition is like carrying a four-leaf clover. A football player may always insist on a pregame steak, while a runner might demand a large serving of pasta. Every athlete wants to know what is best to eat before exercising.

Is there a *magic* precompetition meal that can guarantee an athlete's best performance or victory for the team? Unfortunately, there is not; however, there is knowledge that may help performance be at the best level.

Scientists have researched both the timing and the content of the precompetition meal to a great extent and have found that there really is no one menu to follow. A nutritionally sound precompetition meal will not compensate for an inadequate training diet. Performance depends more on the foods and beverages consumed for days, even weeks, before an event.

Nutritionists suggest that the psychological benefits of the precompetition meal should not be taken lightly. Performance depends on feeling at your peak condition physically, mentally and emotionally. The pleasure of eating familiar, well-liked foods may well give the athlete's mind and spirit the needed edge.

What To Eat

Nutritionists suggest this golden rule for athletes preparing to compete:

Eat familiar foods and drink plenty of water.

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When planning a precompetition meal, first select foods and beverages both liked and tolerated. The meal should be foods the athlete is accustomed to eating. The day of a competition is not the time to try a new food or diet. It is best to wait until after the competition to try local specialties. Any time new foods are eaten there is a risk of gastrointestinal distress such as diarrhea or abdominal cramps.

Another consideration is planning a meal that will not interfere with the physical stress put on the body during competition. The precompetition meal for a baseball player may be quite different from that of a distance runner. Carbohydrates help provide the store of energy needed for hours of continuous activity. Keep in mind the following guidelines when planning precompetition meals:

- Foods high in fat or protein take longer to digest than carbohydrates foods and, if eaten a few hours before an event, can cause indigestion, nausea or vomiting.
- To have a relatively empty stomach during the event, the athlete should eat no sooner than 2 to 4 hours before competition.
- Eating sugary foods such as candy and honey right before exercise does not provide quick energy.

Athletes taking part in stop-start sports, such as football, basketball, swimming and volleyball, should eat a precompetition meal that is moderately high in carbohydrate foods, such as bread, potatoes, rice and pasta, but low in fat. Fluids such as water, milk or juice, should be a part of the meal.

The mental stress that accompanies the *big* game or an important match may cause the gastrointestinal tract to react to stress in one of two extremes it speeds up or it slows down. Either way, performance and comfort level can be affected. The physical stress of competing in an all-day meet or tournament can leave little time or inclination to eat. Whether it is physical or mental stress, there is a need to maintain energy and fluid balance for best performance. Even when not feeling hungry, plenty of water and eating small carbohydrate-rich snacks can be important. This may help ease hunger pangs, provide energy and meet fluid needs.

The Right Time To Eat

Practically every set of guidelines for precompetition meals recommends a time to eat. Although there are exceptions, a common suggestion is to eat 2 to 4 hours before an event. This time frame usually ensures an empty stomach at the time of competition, without feeling hungry or weak. The size and content of the meal also may influence how quickly the stomach empties.

Remember: The timing of the precompetition meal really is an individual matter. Although most athletes find eating 2 to 3 hours for smaller meals before competing works best for them, others may need to allow as much as 6 hours between the meal and the competition. It usually takes 3 to 4 hours for large meals to digest.

In general, the precompetition meal should be:

- moderately high in carbohydrates;
- low in fat, protein; and
- enough fluid for the individual to be well hydrated.

Remember to eat:

- 3 to 4 hours for a large meal to digest;
- 2 to 3 hours for a smaller meal;
- 1 to 2 hours for a blended or liquid; and
- less than an hour for a small snack.

Nutrition After Exercise

What you eat after a hard workout can affect your recovery. After competition, it is extremely important to drink plenty of water or fruit juice for rehydration and to replenish glycogen stores. The body is most efficient at absorbing and storing glycogen during the first 4 or 5 hours after exercise. Foods and fluids to be eaten after competition include good sources of carbohydrates such as breads, crackers, pretzels, fruits and vegetables.

Precompetition eating really becomes an individual matter. Most importantly, the meal should include foods the athlete *thinks* will help. Whether the food is a meatball sandwich, a favorite snack food or a mushroom pizza, each person has unique preferences.

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Tips for the Diabetic Athlete

1. Exercise regularly, preferably at the same time each day to help you determine and stabilize your insulin and food requirements. *Consistency* is very important for optimal blood sugar control.

2. Exercise with someone else. This person should know that you are diabetic, be aware of the signs of hypoglycemia (confusion, weakness, unconsciousness, convulsions) and also know what to do in an emergency. Some diabetics are misdiagnosed as drunks because their speech is incoherent and they stagger and fall.

3. Do not inject insulin into the muscles you will be exercising. Otherwise, the exercise causes the insulin to be mobilized faster and you may become hypoglycemic. You'll also have less insulin available to you later in the day or evening.

4. For the average diabetic in training, you should keep the insulin dosage the same and eat more food. If you repeatedly become hypoglycemic during or after exercise (despite more food) you should talk to your doctor about reducing your insulin.

5. If you're going to be participating in a one-shot bout of high activity (such as an unexpected basketball game), you should eat food before and may want to reduce your insulin. Through experience, you'll learn about your body and what works best for you.

6. To best determine your energy/insulin needs, you'll want to monitor your blood glucose during training (for example, between quarters of a football game; between laps of swimming). You may also need to reestablish these needs when the weather changes from hot to cold.

7. Always exercise after eating when your blood sugar is on the rise. Do not start to exercise with low blood sugar. Eat a snack first.

8. Always carry sugar in some form with you. (Hard candies are popular because they aren't messy.) Also carry change with you for a phone call or a vending machine.

9. During long-term exercise, you need to constantly replace glucose supplies. When swimming, you may want to pop out of the pool after 50 laps to drink a can of orange juice; during a marathon, you'll need to eat sugar or snacks along the route.

10. Since a diabetic's ability to store and mobilize carbohydrates in the right amounts at the right times is impaired, you should not try to *carbo-load*. Rather, plan to eat extra calories during exercise.

11. On a long day trip, such as hiking or cycling, eat six small meals containing both carbohydrate and protein. Be over-prepared with extra *emergency food*, in case you get unexpectedly delayed. Explain to your friends beforehand that you are unwilling to share the food with them.

12. Drink plenty of fluids before and during exercise, to prevent yourself from becoming dehydrated. You need more fluid if your urine is a dark color and in small amounts.

13. Since exercise has a lingering effect, you should eat more than usual after you stop exercising. Otherwise, you may become hypoglycemic that night or even the next day.

14. Wear comfortable shoes to prevent blisters and feet problems. Meticulously take care of injuries.

Pinning Down Your Optimal Weight

Rapid Weight Loss and Dehydration Can Harm Health and Athletic Performance

Which Americans undertake the most extreme, potentially hazardous, weight loss programs? Many people vie for this dubious distinction, but you may be surprised to learn of one group at high risk: *teenage boys.* More than 245,000 high school boys participate in wrestling, the fifth most popular sport among high school students.

Young men who participate in wrestling have the opportunity to develop a broad range of athletic skills. The sport enhances individual initiative with a team setting. But many student wrestlers use dangerous techniques to *make weight*. Paradoxically, this impairs athletic ability and risks permanent health damage.

The practice, a serious problem in high schools throughout the nation, also extends into colleges, and now is surfacing in junior high schools. Nutritionists join responsible coach's and athletic trainer's call for an end to this dangerous practice in student wrestlers.

Wrestling has several advantages. Minimal equipment requirements (uniform, protective headgear and a mat on which to compete) make it one of the least expensive sports. Wrestling is a sport for individuals of many body sizes. Wrestling involves a wide range of athletic skills: physical strength, for both endurance and *bursts* of exertion, speed and agility. Unlike boxers, wrestlers do not seek to hurt each other. In general, wrestling is a safe sport; the majority of injuries involve sprains of the ankle, knee and shoulder. Wrestling contests once lasted close to an hour, but today's high school matches consist of three 2-minute rounds with no rest period.

Making weight

Given the value of this sport, it is unfortunate that wrestling should be associated with hazardous health practices.

Before a match, opposing wrestlers are paired by weight. Some wrestlers seek drastic ways to lower their body weight. They often lose weight to compete against opponents of smaller stature and less strength. This practice goes by many names but is commonly called *making weight.*

Wrestling organizations and many coaches do not sanction the practice, but the problem is widespread. In one study, 41 percent of wrestlers

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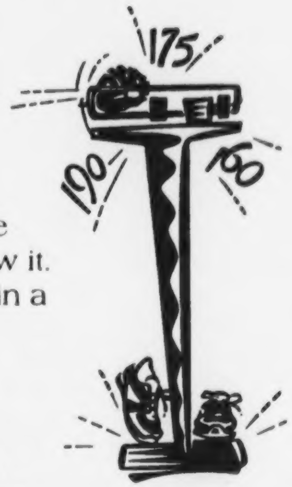
reported weight fluctuations of 11 to 19 pounds every week of the season.



In essence, it is a *yo-yo* approach to weight control. Some wrestlers fast or drastically reduce food intake and refrain from drinking fluid for 12 to 24 hours before a match. They even spit out saliva rather than swallow it. Others might exercise in rubber suits and spend time in a sauna or steam room.

Some wrestlers use laxatives or diuretics. In extreme cases, they self-induce vomiting or donate blood. To lose weight they risk dehydration, decreased strength and physical harm. Wrestlers may go on such programs 20 or 30 times during the four-month wrestling season. This can add up to several numerous times throughout their wrestling careers. The effects can be dangerous.

Fluid Facts and Making Weight

- **Exhaustion and Heat Stroke** - Fluids help cool muscles that become heated by exertion. If the body does not have sufficient liquids, heat can build to dangerous levels. Dehydration not only impairs muscle performance, it also tends to inhibit the sweating process and increases the possibility of problems in temperature regulation. The loss of even five percent of body fluids heightens this danger.

- **Kidney problems** -The kidneys depend on fluid to eliminate metabolic waste products. Results of extensive urinalysis suggest that wrestlers who repeatedly use dehydration to *make weight* may have acute episodes of renal anemia.

- **Limited cardiovascular capacity** -Dehydration limits the heart's ability to pump blood throughout the body, especially during strenuous physical activity.

- **Decreased strength and endurance** -Youthful wrestlers, in general, have lean physiques. Since they have only small amounts of body fat, weight loss cuts into their muscle mass.

  It is not clear whether *making weight* will diminish strength in every case. But there is evidence that premature fatigue is likely. Wrestling demands intense bursts of energy. The athlete who dehydrates himself to enter a lower weight class may have less stamina than an opponent who naturally belongs in that weight class. The Iowa Wrestling Study, a major research study, concluded that there is *unequivocal evidence that (athletic) performance will be impaired when athletes take extreme measures to drop weight.*

- **Diminished growth** - The teen years play a vital role in determining health for the rest of life. Bones are growing and hardening. Muscles are developing. *Making weight* might affect overall growth patterns. Studies have found that some athletes, among the best physical specimens in their age group, fail to attain expected stature.

What Can Be Done?

As the dangers of *making weight* become more evident, physicians, researchers and wrestling officials are suggesting ways to improve the situation. We endorse these approaches:

- **Adequate nutrition** - The American Dietetic Association (ADA) urges wrestlers to think in terms of weight control, not weight loss. Average requirements for the teenage male athlete are 2,100 to 3,900 calories a day.

  Smaller, more frequent meals may be helpful. It is acceptable to limit foods that retain fluid (excessively salty foods such as potato chips, ham, luncheon meats, pickles and soups) but fluid intake is vital before, during and after competition. Fluid restriction is not acceptable.

  A well-conditioned athlete should lose weight by reducing body fat, not fluid. Even so, some fat (for males, a minimum of 7 to 10 percent, and females 14 - 17 percent of weight as fat) is necessary to provide a modest reserve.

  Overall eating patterns are important. Athletes who deprive themselves before a match often *binge* or *gorge* on food afterward. While this may cause no immediate problem, it could set a pattern for weight problems in the future.

- **Development** - Most wrestlers begin the sport early in their teenage years. The pressure for immediate success is great, as is the sense of limited time for achievement. Adults must encourage youths without pushing them too hard, too early. An athlete's emotional and mental well-being are as important as physical ability.

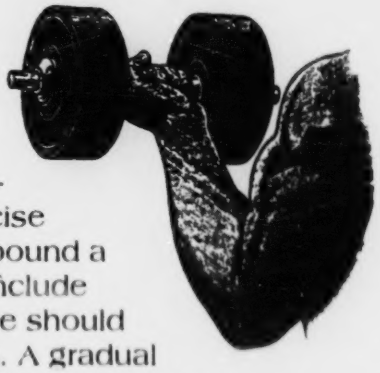
  Experts are studying patterns in human growth. In time, it may be possible to establish a person's optimal weight. This would determine a minimum below which an athlete should not lose weight. Benefit: fair limits for competition that also permit adequate growth.

- **Education** - High school wrestlers rarely seek advice on losing weight from physicians or dietitians. They rely on advice from coaches and folk wisdom from their peers, which may be wildly inaccurate. Some athletes follow training diets that includes barely one-third of their calorie requirements. Schools have the responsibility to educate as well as physically condition these youths.

- **Training** - *Making weight* is largely an American phenomenon. European and Asian wrestlers tend to maintain desirable weight throughout the year. They typically concentrate on *increasing strength* rather than losing weight. This pattern could benefit many American athletes.

- **Rules** - Currently, weight classification takes place 1 to 3 hours before competition. Wrestlers know they are weak after fluid deprivation, but they hope to regain strength by taking in large amounts of fluid before the match. One way to discourage this false idea is to hold weigh-in just prior to competition.

Losing Fat...Not Muscle



To maximize the loss of fat and minimize the loss of muscle

- Decrease calories gradually. Plan to lose two pounds or less a week. Five hundred calories less a day along with the increase in exercise from wrestling practice should result in a two pound a week loss. Higher, quicker weight losses will include muscle. If a wrestler has five pounds to lose, he should start at least three weeks before his first match. A gradual weight loss will keep him strong and weight will be easier to maintain once he has reached his desired goal.

- Carefully plan what is eaten so there is enough fuel for your muscles. A person may have to drastically change the way he eats to maintain a weight loss. Wrestlers, like most American teenagers, typically eat high percentages of fat, lower percentages of carbohydrates, and higher percentages of proteins than recommended for athletes. This typically high fat diet reduces endurance. A low fat, high carbohydrate, moderate protein diet is the best way for athletes to eat, especially for wrestlers who maintain low percentages of body fat, yet need to be very strong and physically fit. Muscles use energy even when they are not in use. As athletes train, they increase the size of their muscles which increases the energy needed each day. A high carbohydrate diet is the best way to lose weight and stay in shape.

Weight Gain the Healthy Way

When it comes to weight, most sports-active people contentedly maintain their desired weight or else struggle to lose a few pounds. Others, however, enviously wish they could add a few pounds. People who wish to gain weight should be aware that a healthful weight gain can only be achieved through physical conditioning combined with eating a high-calorie diet. Eating more calories of food can bring about weight gain, but it will be mostly fat, and this can be more detrimental to health than the underweight. In an athlete, such a weight gain can impair performance. In weight gain, as in weight loss, physical activity is an essential component of a sound plan.

If a person desires to gain weight, he may need to learn to eat different foods. No matter how many sticks of celery are consumed, weight will not be gained very fast because celery simply doesn't offer enough calories. The person who cannot eat much volume is encouraged to use calorie-dense foods in meals. Choose nutritious food, but choose milk shakes instead of milk, peanut butter instead of lean meat, avocado instead of cucumber, whole-wheat muffins instead of whole-wheat bread. When celery is eaten, put cream cheese on it; use creamy dressings on salads, whipped toppings on fruit, margarine on potatoes, and the like. Because fat contains twice as many calories per teaspoon as sugar, it adds calories without adding much bulk, and energy in a form easy for the body to store.

Eat more frequently. Make sandwiches in the morning and eat them between classes in addition to the day's regular meals. Spend more time eating each meal: if you fill up fast, eat the highest calorie items first. Start with the main course. Drink between meals, not with them, to save space for higher calorie foods. Always finish with dessert.

Behavior modification principles can work to change the behaviors of undereating as well as overeating. The person who needs to gain weight must, like the person who needs to lose weight, strengthen cues to appropriate eating and exercise. The undereater should identify and select the cues that the overeater is trying to eliminate. For example, *do* snack while watching television, make large portions of food look small and relax more.

Summary

A *competitive* weight can be achieved through a sound, balanced diet and an appropriate training program. The practice of *making weight* is dangerous to the wrestler's health and spoils the integrity and value of wrestling. Whether trying to lose or gain weight, young athletes need support from parents, coaches, and health-care professionals.

Pills, Powders and Potions

Athletes can be sitting ducks for quacks who sell a tide of products—steroid drugs or steroid-drug substitutes, protein supplements, vitamin or mineral supplements, carbohydrate or "complete" drinks, "muscle-building" powders, electrolyte pills, and many other so called ergogenic products. The term *ergogenic* implies that such products have special work-enhancing powers. Actually no food or supplement is ergogenic.

Definition

ergogenic: The term implies "energy giving," but, in fact, no products impart such a quality.

ergo = work, **genic** = gives rise to.

Some advertising creates the illusion of credibility to gain readers' trust and thus boost sales. Such an ad might have graphs, tables and a professional-looking "review of the literature" citing credible sources such as *Journal of Clinical Nutrition* and *Journal of the American Medical Association*. This sounds scientific, and it may be, but don't forget the advertisements are written not to teach, but to sell. A careful reading might reveal that the company has taken the facts out of context.

Substances alleged to be ergogenic can be ineffective, dangerous, or both. The list of substances used by athletes is long and includes *anabolic steroids, amphetamines, caffeine, warm-up procedures, oxygen inhalation, appetite stimulants, glycogen loading* and *nutrient supplementation. The* list grows yearly.

- Anabolic steroids are synthetic hormones made in laboratories which function like the male hormone testosterone. Anabolic steroids are drugs that are used to increase muscle size, strength and endurance. The American College of Sports Medicine's position on anabolic steroids states:

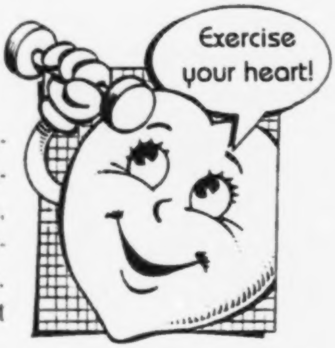
  > *The use of anabolic-androgenic steroids by athletes is contrary to the rules and ethical principles of athletic competition as set forth by many of the sports governing bodies. The American College of Sports Medicines supports these ethical principles and deplores the use of anabolic-androgenic steroids by athletes.*

Research has shown that these drugs are especially hazardous to adolescents. Anabolic steroids have been associated with liver disease, growth stunting through premature fusing of long bones, acne, and sterility. Steroids can also produce masculinization in girls. Bee pollen is being promoted as an ergogenic aid which acts like an anabolic steroid to increase muscle mass and strength. There is no evidence that this substance does anything except increase sales for companies that make it.

- **Amphetamines** are used in sports to mask the feeling of fatigue. These drugs can have side effects which compromise good judgment on the playing field. These effects are dizziness, confusion, and an inhibition of awareness of heat stress. They may interfere with normal heart function and have been the cause of death in endurance events.

- **Oxygen inhalation** in an effort to promote rapid recovery has been in vogue for many years, particularly in professional athletes. Several studies have indicated that oxygen treatment does enhance work performance but it does not seem to speed up recovery. From an economic and practical standpoint, the use of oxygen as an ergogenic aid seems limited.

- **Warm-up procedures** have been used in an effort to prevent joint and muscle injuries. Laboratory studies have shown that muscle and joint injuries do not occur with greater frequency when not warming-up as compared to warming up. However, warm-ups do provide a psychological lift to athletes. Also, these exercises help reduce abrupt increases in cardiac or heart work load in sudden, intense exercise. The practice of warming-up should be an important part of any exercise program.


Exercise your heart!

- **Nutrient supplementations**, such as protein, vitamin and minerals are all popular *ergogenic* aids. Some research studies show minor improvement in performance with particular vitamin supplementation, an equal number of studies show no benefit. Some athletes believe that if small amounts of vitamins are good, more will be better! In moderate doses, the water soluble vitamins, vitamin C and the B vitamins, are not dangerous. This is because excessive intakes are not stored in the body. An excessive intake above basic need is eliminated in the urine. Fat soluble vitamins, A, D, E, K, can reach toxic levels in the body because intakes above body needs are stored in fat tissue and can build up to high levels. In addition, high-dosage vitamin and mineral supplements can interfere with the normal metabolism of other nutrients and with the therapeutic effects of certain drugs.

Vitamins function like oil in a car. A little extra will not make the engine run better. Vitamins *do not* contain energy. They work in conjunction with enzymes to convert carbohydrate, fat, protein and alcohol into energy. Remember, vitamins and minerals often work in teams. For example, vitamin C helps iron to be absorbed and vitamin D helps calcium and potassium perform their function. Vitamin supplements contain only some of the 50 plus nutrients the body needs and do not really replace a balanced diet and training.

Ten times the Recommended Dietary Allowances (RDAs) of a vitamin is considered to be a *megadose*. Regular use of megadoses of vitamins may be dangerous. Vitamins are chemical substances with specific functions. Excessive amounts of vitamins may take on other chemical activity and could become dangerous. For example, megadoses of vitamin C can destroy vitamin B_{12}. The body functions best when its systems are in balance. Athletes should get vitamins from the foods they eat. They do not need vitamins from pills.

What about drinks or candy like bars claiming to provide "complete" nutrition? These mixtures of carbohydrate, protein (usually amino acids), fat, and certain vitamins and minerals usually taste good and provide additional food energy for those who need it. However, they fall short of providing "complete" nutrition, since they lack fiber, many nutrients, and the non-nutrients of real food. Beyond energy, they provide nothing special for active people.

Protein supplements are expensive and unnecessary because the protein in foods of the average American usually far exceed a person's protein needs.

Supplementation of the mineral iron is sometimes recommended for female athletes who may have anemia due to an insufficient iron intake. Mineral supplementation of sodium chloride or salt has been promoted for years, because some people reason that salt tablets should be used to replace the salt lost in sweat. The salt from foods normally eaten will adequately replace the small amount of salt lost through sweat even in hot weather. *Salt tablets should not be used because they can actually promote fluid retention and potassium loss.*

Caffeine has been used as an ergogenic aid when participating in endurance sports and moderate intensity work performance. In spite of its ergogenic effects, there can be side effects, and it is not recommended for use by school age athletes.

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Summary

The overwhelming majority of potions touted for athletes are frauds. The placebo effect is strong at work in athletes, so even if a reliable source reports a performance boost from a newly tried concoction, give it time, chances are that the effect was simply the power of the mind over the body. Incidentally, don't discount that power, since it is formidable. You can use it by imagining yourself as a winner and by visualizing yourself as capable in your sport. You don't have to rely on magic for an extra edge because you already have a real one—your mind.

Steroids in Sports

Anabolic steroids are a group of powerful natural or synthetic compounds that are closely related chemically to the natural hormones of the male. Virtually every athlete, coach and trainer seriously interested in methods of increasing muscle size and strength is familiar with them. Since these drugs have generally been condemned by physicians and outlawed by sports federations, much of what is known by athletes is based on hearsay, personal contact and limited observation. Some athletes tend to view the effects as positive but doing so is rather shortsighted.

The personal and financial stakes involved and the winner-take-all pattern of compensation have helped establish and reinforce the win-at-all-cost philosophy that seems to pervade sports. These factors, coupled with an increased availability of anabolic steroids, are associated with an increasing use of these dangerous substances.

Just what are these drugs and what do they do? As previously mentioned, anabolic steroids mimic the structure and effects of the male sex hormone (testosterone). Testosterone is called an *androgen* after the Greek word meaning *male producing*. It is also *anabolic* in that it can stimulate the build up of tissue. Hence, these drugs are often referred to as *androgenic-anabolic* steroids. In this discussion, only the word steroids will be used although it is recognized that there are many more steroids than the anabolic-androgenic steroids specifically referred to here.

Scientists have met with success in changing the structure of some steroids in order to build muscle while minimizing the masculinizing effects of the hormone. However, no pure muscle-building steroid has yet been developed. All of the available drugs have both actions, but to varying degrees in different individuals.

Primary approved uses for these steroids include

- replacement therapy (for boys or men deficient in the natural male hormone);
- malnutrition treatment;
- skeletal disorder and other growth deficiencies;
- healing of soft-tissue injuries;
- certain types of anemia and wasting diseases; and
- to offset the negative effects of radiation and chemotherapy treatment.

Results of approximately 30 research findings published over the last two decades deal with the effects of steroid use and exercise in human volunteers. In general, investigations showed that low doses of steroids used during a strength-building program (weight training), produced small yet measurable increases in strength, body weight and muscle mass. A reduction in the amount of body fat was also found. It is thought that these steroids act to increase the build up of muscle as well as reduce the breakdown of muscle tissue that occurs during exercise training. Another effect is their move to adverse action on the central nervous system (brain), resulting in increased aggressiveness. The positive effects of these steroids on performance are variable and are not experienced by all individuals.

While using steroids, muscle and strength development are dependent upon many factors including individual genetic make-up, the degree and history of training and personal state of mind. In addition, diet, especially of protein content and calories, play an important role in body weight gain and amount of muscle developed. High intakes of protein, however, do not ensure that increases in muscle and strength due to steroid use will be seen.

The information available on young male and female athletes prior to or during puberty is scarce. It would be expected that these individuals would be affected more by steroid use than adults.

In addition to the positive effects of steroid use, many undesirable effects have also been noted. The effects of major concern are those on the liver, cardiovascular system, reproductive system and psyche.

Effects on the Liver

The liver plays a central role in the breakdown of many drugs. It is possible that with a high steroid intake an overload could occur leading to liver damage. Animal and human studies concur that liver structure and function can be seriously damaged by the use of high doses of steroids. Exactly how these steroids damage the liver is not known. Impairment of liver function may result in a clinical condition known as *jaundice*. Fortunately, most of these impairments in liver function are not fatal and most are reversible after steroid use discontinues. A serious situation related to the use of large doses of steroids is peliosis hepatitis--the development of blood-filled cysts which can rupture and lead to liver failure. Although this problem has not yet been reported in athletes, it may be occurring without their knowledge. Liver tumors have been found in some patients who took steroids as part of their medical treatment. The majority of these tumors have been found to be non-fatal and regress after discontinued steroid use.

Effects on the Cardiovascular System

Among the risk factors for cardiovascular diseases are high blood pressure and changes in fat metabolism. Steroid use has been found in a number of cases, primarily in patients but also in athletes, to be associated with an increase in the number of risk factors for the development of cardiovascular disease. These include symptoms similar to a pre-diabetic condition, decreased blood concentrations of the *good cholesterol* (known as HDL, which is part of the body's total cholesterol), and increases in blood pressure. Additionally, animal research has shown that steroid use can lead to damage of the heart muscle itself. These problems appear to be reversible when steroid use is discontinued, but represent warning signs against prolonged use.

Effects on the Reproductive System

The effects of steroid use on the male reproductive system include reductions in sperm production (to the point of few viable sperm in some cases), decrease in size and tissue changes within the testes, and reductions in the amount of sex hormone output, resulting in a reduced sex drive. All these changes have been observed in athletes as well as in other healthy men and patients. These changes are reversible when steroid use has stopped, but it may be some months before returning to normal.

Females taking steroids have been found to have reductions in female sex hormones (both estrogen and progesterone), inhibition of egg development and ovulation, and varied disruptions of the menstrual cycle. In addition, some female athletes have found that male secondary sex characteristics remain after cessation of steroid use.

Psychological Status

In both sexes, psychological effects of steroid use include reduced or increased sexual interest and increased moodiness and aggressive behavior. Steroids are reported to cause changes in brain wave activity resembling those observed with stimulants and anti-depressants. The possibility of development of aggressive and hostile behavior is always prevalent.

Miscellaneous Adverse Effects

Other undesirable effects associated with steroid use include: a loss of muscular coordination (ataxia), and premature closure of the epiphysial growth plates in youths, resulting in short stature as an adult.

In women this includes changes in sex characteristics such as deepening of the voice, increased oiliness of the skin, and changes in fat distribution including a reduction in breast size and changes in hair growth patterns all over the body to include beard growth, thinning of hair in the temporal region, and falling out of hair in patches (alopecia).

An additional finding in some male athletes and patients is the development of female breast-like tissue in response to the conversion in the body of some of these steroids to the female hormone (estrogen). These adverse reactions are believed to be dependent upon the amount of steroid used and length of time of its use. However, there is no way to predict which individuals are more likely to develop these adverse effects, some of which are potentially hazardous. There is no reason to believe that the athlete using steroids is immune from any of these effects.

Summary

In many clinical studies and limited research on athletes, the use of anabolic steroids has been associated with a variety of serious adverse effects on the liver, cardiovascular, reproductive systems and psychological status. Until considerably more research is conducted, a cautious approach dictates that steroid use by athletes is potentially hazardous. Fatal complications have occurred with their use by patients and athletes.

The American College of Sports Medicine considers the medically unjustified use of steroids as unethical and deplorable.

Meals on the Go

Americans are eating more and more meals on-the-go. A recent Gallop survey indicated that an average of 3.7 meals per week are eaten on-the-go. Until recently, there were few nutritious, balanced food choices available in fast-food restaurants. In the past few years, however, fast-food franchises and family-style restaurants began to take healthful eating seriously and added more nutritious foods to their menus.

Fast Food

Many athletes and coaches choose convenience foods because of tight time schedules. Although the amount of time available may seem to outweigh nutrition considerations, they need not conflict. Fast-food establishments provide quick service, inexpensive meals, and consistent food quality at easily accessible locations. Although many fast foods still have too much fat and salt and not enough vitamins, minerals and fiber, many franchises now offer low-fat, nutritious food choices as well.

When stopping at a fast-food restaurant, remember to focus on finding foods high in carbohydrates.

Meal Plans for Fast Food Adapted from Sports Nutrition for the Child Athlete, ADA, 1993.

Try Some.....	**Better Think Twice....**
Pancakes w/syrup	Biscuit with egg, cheese, and bacon
Low-fat (1%) milk	Whole milk
Orange juice	
Baked potato w/chili	Deluxe double cheeseburger
Roll w/1 pat margarine	Large french fries
Garden salad, 1/4 pkg. dressing	Soda
Low-fat yogurt milk shake	Apple pie
Thick-crust vegetable pizza	Double cheese, double pepperoni pizza
Bread sticks	Fried mozzarella cheese
Garden salad, 1 ladle dressing	
Low-fat (1%) milk	Soda
Single hamburger	Hot dog w/chili and cheese
Muffin	Onion Rings
Orange juice	Chocolate Shake

Family-Style Restaurants

Family-style restaurants offer a wide variety of nutritionally sound choices. Eating a meal together before or after a game or competition can be an enjoyable experience.

Breakfast items, such as pancakes, cereal, bagels and English muffins, are an inexpensive and easy way to select high-carbohydrate meals. Many other menu items offer sound sports nutrition. Consider the lunch or dinner menus listed below and why they would or would not be good for athletes in training.

Meal Plans for Restaurant Food Adapted from Sports Nutrition for the Child Athlete, ADA, 1993.

Try Some.....	**Better Think Twice....**
Roast beef sandwich (lettuce and tomato) Fruit juice Low-fat vanilla milk shake	Fried fish w/tartar sauce Onion rings Soda
Spaghetti w/tomato sauce Bread w/1 pat margarine Garden salad, 1 ladle dressing Fruit cup Low-fat (1%) milk	Crispy fried chicken Mashed potatoes w/butter and gravy Biscuits w/butter Whole milk

Grocery and Convenience Stores

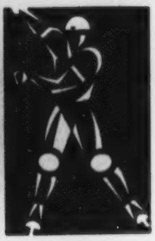
Where can you buy food for the athlete at an all-day soccer tournament? Grocery stores, convenience stores and concession stands are usually the choices available; unfortunately, they typically offer high-fat, non-nutritious foods. Well, maybe not. Grocery and convenience stores are often overlooked as a source of quick, inexpensive, nutritious snacks and meals. Athletes can choose from among fruits, juices, muffins and low-fat dairy products rather than candy bars, snack chips, and soft drinks.

Sometimes special requests to the event organizers for specific food items, for example, fruit juice, fruit and bread products will be honored. If the host of the tournament or race does not plan to offer nutritionally sound foods, be sure to bring a cooler of high-performance snacks or locate nearby sources of low-fat, high-carbohydrate foods. *(See Fit Folks need Fit Food, page 11)*

Summary

Diets that are high in carbohydrate and fluids, moderate in protein, and low in fat will give young athletes enough calories to grow, train and compete. Finding such high-performance choices at fast-food establishments, family-style restaurants, and grocery stores takes practice but can be done.

Eating Disorders

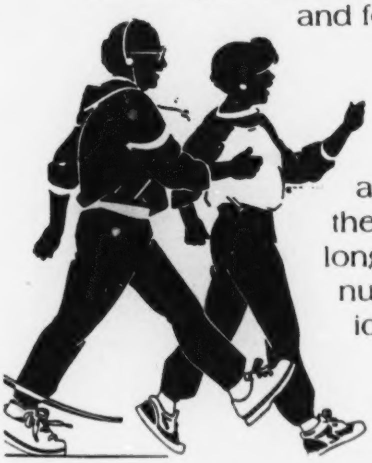


Weight and/or body fat restrictions are imposed in a number of sports including wrestling, gymnastics, distance running, cross country skiing, ballet and figure skating. A light physique often gives athletes a distinct edge in performance. In gymnastics, for example, the ideal image has shrunk from sturdy muscularity to a razor-thin girlish look.

Leanness often creates an image which can enhance the athlete's score from judges. The average young female carries about 20 to 22 percent body fat, but will likely strive for less than 10 percent if she is serious about these sports. The young male athlete will strive for 5 to 7 percent body fat. The norm for young men is 14 to 16 percent.

Rapid weight loss to compete in lower weight classification is a common practice in sports such as wrestling, judo, boxing and weight lifting. Many coaches and athletes believe that training at a heavier weight and dropping weight immediately before competition gives the athlete an advantage. There is no data, however, to support this idea. In fact, research data shows just the opposite. Techniques used to produce rapid weight loss often include fasting, crash diets, dehydration, induced vomiting, laxatives and diuretics (water pills). Any of these can endanger an athlete's health and impair performance.

Weight loss can be beneficial for an athlete only if the weight goal and rate of weight loss are realistic and the diet is balanced. If weight loss is needed, *goals* should be selected considering the number of pounds to be lost and the rate of loss. The rate of loss will vary according to genetic make-up, metabolic rate, and activity levels. It generally should not exceed 2 pounds per week.This will meet the individual athlete's schedule and food preferences.



The coach or person helping the athlete lose weight should check the athlete's weight on a routine basis. The athlete should be offered guidance and encouragement to practice safe dieting. After a few weeks, the target weight should be reevaluated. Dieting for a long time can prevent the athlete from getting all the nutrients needed, and competing at weight levels below ideal can hurt performance.

For some, including athletes, losing weight becomes an obsession. Changes in body fluids cause everyone to repeatedly gain and lose a few pounds. These changes are normal but the athlete may mistake *weight change* for *fat gain* and begin using more extreme methods to lose weight. These methods are often the same ones used before competition to make a lower weight class (starvation, fasting, vomiting, laxative abuse, diuretics and diet pills). If used frequently, the athlete's health will be at risk.

These extreme methods of weight control *are not* recommended. They seldom lead to any successful weight loss. They are unhealthy for the athlete and will result in less than peak performance. For the weight and food obsessed athlete, they may lead to anorexia nervosa and bulimia.

An eating disorder is a symptom of underlying emotional distress. It is first a coping mechanism and then becomes an additional problem. The athlete who has an eating disorder will often have a history of low self-esteem, difficulty with problem solving and inability to handling stress.

Anorexia Nervosa and Bulimia

More and more people today suffer from compulsive eating disorders that threaten good health and, for some, life itself. An estimated 4 to 5 percent of all teenagers and young adult females have either bulimia (binge/purge syndrome) or anorexia nervosa. In general, nine times more females than males have an eating disorder. These disorders can take over when a weight loss diet gets out of control.

Anorexia nervosa is self-imposed starvation in an obsessive effort to lose weight and become very thin. The anorexic individual may, in fact, be so thin she looks malnourished. But when she looks in the mirror, she perceives herself as overweight. Intense fear of weight gain causes the anorexic to think almost constantly about food, dieting and weight control.

Everything related to food or weight becomes highly emotional. To increase the weight loss, anorexics may engage in excessive exercise regimens. An athlete with anorexia nervosa may begin to exercise well beyond the prescribed training program. Recommendations for treatment or prevention of injuries may be ignored if they mean training less. It is common for anorexics to refuse to admit they have a problem. As weight loss continues, they often become depressed, withdrawn, irritable and show a lack of interest in social activities.

Bulimia is characterized by recurring binge eating usually followed by purging. Vomiting, laxative abuse, and intense exercise are purging methods often used in an effort to relieve guilt and avoid weight gain. The person with bulimia may have a normal diet and binge as a means of coping with or avoiding emotional stress. Often, however, the bulimic attempts to fast or severely limit food intake in an effort to lose weight. When hunger or the desire for certain foods becomes overpowering, a binge occurs. The binge/purge cycles become repetitive to the point where it seems they can no longer be controlled or stopped. The bulimic usually appears within normal weight range, but may experience weight fluctuations of ten or more pounds due to the binges and fasts. As the cycle continues, feelings of depression and low self-esteem increase.

It is not uncommon for someone with anorexia nervosa to also practice one or more bulimic behaviors. A term frequently used to identify this combination of disorders is *bulimarexia.*This term denotes the severe weight loss of anorexia nervosa and the use of purging habits used in bulimia.

Complications of Anorexia Nervosa and Bulimia

Anorexia nervosa and bulimia cause the body to feel the harmful effects of dehydration and starvation. The athlete will not be able to perform at his/her best. Starvation, semi-starvation and/or dehydration can cause the following to happen:

- loss of muscular strength
- decreased oxygen utilization
- decreased speed
- impaired judgement
- less blood flow to the kidneys
- reduced heart function
- electrolyte loss
- loss of endurance
- decreased aerobic power
- loss of coordination
- reduced blood volume
- loss of all muscle glycogen
- increased heart rate
- inability to regulate body temperature

Starvation can cause amenorrhea (absence of menstruation). It can also cause loss of bone mass during adolescence. Continued starvation and dehydration result in impaired brain function, irritability, inability to concentrate, depression and withdrawal.

Purging by vomiting exposes the teeth and throat to gastric acids usually found only in the stomach. These acids don't hurt the stomach because it has a protective lining. But they irritate the tissue in the throat and gradually destroy tooth enamel. Vomiting, laxative or diuretic abuse can cause severe electrolyte imbalances resulting in heart arrhythmia (irregular heart beat) and cardiac arrest.

The risk of dehydration is greatest in young athletes and non-acclimatized athletes in poor condition. Dehydration problems are further compounded when athletes purposely lose weight by restricting water and food intake.

Identifying An Athlete Who May Have Anorexia Nervosa or Bulimia

Being *skinny* does not necessarily mean an eating disorder, just as being ideal weight does not necessarily mean one is healthy. An athlete with anorexia nervosa or bulimia may continue to perform well for a longer-than-expected period of time due to sheer determination combined with the body's remarkable ability to adapt to adverse circumstances.

Dieting, weight loss and pre-event diet rituals do not mean an athlete has anorexia nervosa or bulimia. However, if the following signs or behaviors appear, there is need to pay attention:

- Repeated comments about being or feeling fat and questions such as *Do you think I'm fat?* When weight loss is below average.
- Weight loss below the ideal competitive weight set for that athlete and which continues even during the off-season.
- Secretive eating, perhaps noted by food wrappers in room or locker or sneaking food from training table.
- Repeatedly disappearing immediately after eating, especially if a substantial amount of food was eaten.
- Apparent nervousness or agitation if something prevents ability to be alone shortly after eating.
- Bloodshot eyes, especially after being in the bathroom or any other place where vomiting could have occurred.
- Vomitus or odor of vomit in toilet, sink, shower or wastebasket.
- Extreme weight fluctuations.
- Complaints or evidence of bloating or water retention not explained by premenstrual edema (in females) or other known medical conditions.
- Frequent complaints of constipation.
- Lightheadedness, disequilibrium (loss of balance), mood swings not accounted for by other known medical causes.
- Avoiding situations where the athlete would be observed eating. For example, scheduling other activities at meal times, refusing to eat at training table or with teammates on road trips. This may be disguised by an extreme interest in the eating habits of others.
- Purposeless, excessive physical activity that is not part of the training regimen.

Eating disorders can be *triggered* in a susceptible student by a single event or by comments from a person who is very important to the athlete. An offhanded remark referring to an athlete as *pudgy* or *thunder thighs* can become deeply imbedded in the mind of a potential anorexic or bulimic. Comments like these are grossly insensitive under any circumstances. They create an implied expectation but provide no further guidance. This is a cruel setup for the highly motivated, uninformed athlete who wants the coaches' approval more than anything.

Coaches can have a great deal of influence on athletes. They need to assist their athletes in dealing with the emotional and physical distress of dieting. The risk of triggering an eating disorder can be reduced by using the following guidelines:

- **Don't overplay the impact of lower weight on performance.**
- **Emphasize the role of overall, long-term good nutrition and weight control in optimizing athletic performance.**
- **Set realistic goals which address methods of dieting, rate of weight change, and a reasonable target weight.**
- **Arrange for a dietitian to accept referrals to assist athletes with weight management.**
- **Under no circumstances, suggest or encourage purging behavior.**

Everything known about the effects of eating disorders indicates they hurt performance even in the short term. Vomiting, fluid restriction, laxative abuse, and diuretics all contribute to dehydration. The continued rapid weight loss that results from starvation or semi-starvation causes muscle fatigue, decreased coordination, and poor judgement. This is not what makes a winning athlete!

How To Help An Athlete With Anorexia Nervosa or Bulimia?

Identify behaviors which suggest an athlete has an eating disorder. Be accessible to team members who may be concerned and searching for a way to help. Avoid labeling the athlete as anorexic or bulimic.

If you think an athlete has an eating disorder, do not attempt to diagnose or treat athletes with anorexia nervosa or bulimia. An eating disorder is a very complex problem. Help the athlete identify and contact an eating disorders specialist for professional screening. If the athlete denies the problems, but the evidence appears conclusive, consult a trained clinician and review the situation. Focus on the evidence and what the athlete is able to tell you regarding her or his feelings.

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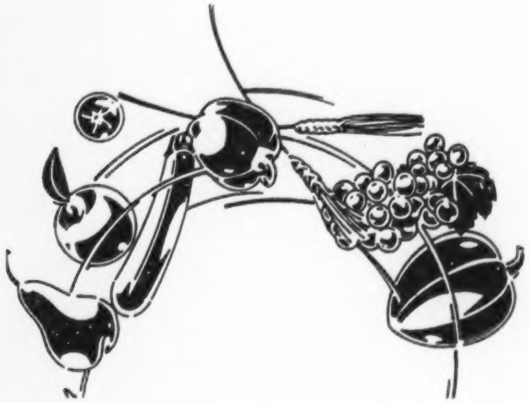
Summary

An eating disorder is both a psychological and physiological problem. Diagnosis should be made by a physician, psychologist and nutritionist trained in eating disorders' management. Anorexia nervosa and bulimia can be managed through medical help. It is very important that the person with an eating disorder receive care from trained professionals in the areas of medicine, psychology and nutrition, who have experience in eating disorders.



For information on referral treatment contact:

Nutrition Specialist
Bureau of Nutrition Services and WIC
Missouri Department of Health
P.O. Box 570
Jefferson City, MO 65101
(314) 751-6195

An Eating Disorder Profile

Anorexia Nervosa

Early Symptoms

- low self-esteem
- misperception of hunger, fullness and other bodily sensations
- feelings of lack of control in life
- flawed body image
- overachiever
- compliant
- agitated
- choatic family system

Middle Stage Symptoms

- menstrual cycle stops (amenorrhea) with extreme weight loss
- increasing preoccupation with food and eating
- withdrawal from family and friends
- perfectionistic behavior
- overexercise
- moody
- attempts to control family's eating
- increased amount of facial and body hair (lanugo)
- fatigue
- decreased amount of scalp hair and thin, dry scalp

Crucial Stage Symptoms

- emaciated appearance (at least 25%
- loss of total body weight)
- feelings of control over body
- rigid
- depression and apathy
- fear of food and gaining weight
- malnutrition
- mood swings
- diminished capacity to think
- cold sensation
- electrolyte imbalance (weakness)
- denial of problem (sees self as fat)
- joint pain (difficulty walking and sitting)
- sleep disturbance

Bulimia

Early Symptoms

- low self-esteem
- feeling that self-worth is dependent
- on low weight
- dependent on opposite sex for approval
- normal weight
- overconcern with body shape & weight
- experimentation with vomiting, laxatives and diuretics
- poor impulse control
- fear of lack of control

Middle Stage Symptoms

- increased criticism of one's body
- impulsive
- depression
- excessive concern about weight
- eats alone
- preoccupied with eating and food
- tiredness, apathy, irritability
- gastrointestinal disorders
- anemia
- social isolation, distancing friends and family
- hishonesty, lying, stealing food or money
- tooth damage (gum disease)
- "chipmuck" (puffy) cheeks
- drug and alcohol abuse
- laxative and diuretic abuse

Crucial Stage Symptoms

- mood swings
- swollen glands
- difficulties in breathing or swallowing
- hypokalemia (abnormally low potassium concentration)
- electrolyte imbalance
- general ill health, constant physical problems
- possible rupture of heart or esophagus, peritonitis
- dehydration
- irregular heart rhythms
- suicidal tendencies

Recognition of Need for Help

Rehabilitation

- acceptance of a psychiatric treatment plan
- participation in a teatment program that includes the family
- acceptance of illness
- resumption of normal self-control and normal eating
- diminished fears
- relief from guilt and depression
- achievement of personal goals in a wide range of activities
- new friends, new interests
- return of regular menstrual cycles
- willingness to face core personal issues
- more understanding of family
- developing optimism
- improved self-image
- feeling of being in charge of own body
- honesty
- understanding of personal needs
- trust and openness

Recovery

Ongoing Support (with family)

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Appendum

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Nutri - Topics

Food and Nutrition Information Center
National Agricultural Library
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Educator

ISSN:1053-8895
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Sports Nutrition

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Sports Nutrition for the 90's: The Health Professional's Handbook. Jacqueline R. Berning and Suzanne Nelson Steen, (eds.). Gaithersburg, MD: Aspen Publishers, Inc.1991. 299 pp.

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Weight (16 min.) and 3) *Eating Disorders: What Can I Do?* (15 min.). **Content:** The videos cover the problems created by the drive to lower weight without regard for proper diet, the consequences of eating disorders, and what coaches, teachers, and others can do to help the student-athlete with an eating disorder. Includes masters of hand-outs on eating disorders, nutrition, weight loss, amenorrhea, and a resource list. **Audience:** Athletes with eating disorders, Coaches, Teachers, and Parents.

The Performance Factor. (1990). Produced by the Gatorade Sports Science Institute at The Quaker Oats Company. Available from: Mediatech, Inc., Dept. E, 110 West Hubbard, Chicago, IL 60610. (312) 828-1146. **Includes:** 12 min. (VHS) videocassette, educator's guide and two reproducible handouts. **Content:** This video tells about fluid balance during exercise and how dehydration affects the body and athletic performance. **Audience:** Athletes.

Sports Nutrition: Fueling a Winner. (1989). Cambridge Career Products, P.O. Box 2153, Charleston, WV 25328-2153. **Includes:** 90 min. (VHS) videocassette and 40-page user manual. **Content:** This video covers pre-competition, post-competition and training meals. It also covers sports nutrition myths as well as weight management to optimize athletic performance. **Audience:** Young and Adult Athletes.

Eating Disorders and Athletic Performance. (1988). International Center for Sports Nutrition, 502 S. 44th Street. Suite 3012, Omaha, NE 68105. (402) 559-5505. **Includes:** 15 min. (VHS) videocassette. **Content:** This video discusses factors precipitating anorexia/bulimia, indicators of an eating disorder, psychological effects of eating disorder behaviors, and proper methods for weight loss. **Audience:** Nutritionist, Athletes, Coaches, Trainers.

Winning Sports Nutrition. Volume I: The Training Diet. (1988). Agricultural Sciences Communications, The University of Arizona, 715 N. Park, 2nd Floor, Tucson, AZ 85719. (602) 621-1726. **Includes:** 20 min. (VHS) videocassette. **Content:** This video covers how to eat a healthy diet (even at fast food restaurants), avoid dehydration, and maintain the proper weight. **Audience:** Athletes, Coaches, Parents.

Winning Sports Nutrition. Volume II: The Competition Diet. (1988). Agricultural Sciences Communications, (see address above) **Includes:** 20 min. (VHS) videocassette. **Content:** This video covers eating and hydration tips for all phases of athletic competition. **Audience:** Athletes, Coaches, Parents.

Eating for Sport. (1984). The Polished Apple, 3742 Seahorn Dr., Malibu, CA 90265-5699. (310) 459-2630. **Includes:** 28 min. (VHS) videocassette. **Content:** This video features nationally recognized experts on sports nutrition discussing athletes' needs in such areas as basic nutrition, carbohydrate loading, electrolyte and water replacement. **Audience:** Young and Adult

Athletes, Teachers.

Slides:

Eating Disorders and Exercise. (1992). Available from Nancy Clark, Sports Medicine Brookline, 830 Boylston Street, Brookline, MA 02167, (617) 739-2003). **Includes:** 70 slides, script. **Content:** In a question and answer format, this slide show introduces and defines eating disorders and their prevalence among athletes and discusses how to alleviate food fears and create a healthy diet. **Audience:** Athletes, Coaches, Trainers, Parents, Health Professionals, Weight Conscious Women.

Sports Nutrition: How to be Physically Fit and Nutritionally Sound. (1990). Nancy Clark, Nutrition Services, Sportsmedicine Brookline, 830 Boylston Street, Brookline, MA 02167. **Includes:** 75 slides and teacher's guide. **Content:** Addresses sports nutrition topics in a question and answer format. **Topics include:** carbohydrates, fluid needs, pre-event meals, weight reduction, vitamin supplements, caffeine, and so forth. **Audience:** High School, College, and Adult Athletes.

Training table: A complete sports nutrition program. (1987). Nutrition Services, Portland Public Schools, 501 N. Dixon St., Portland, OR 97227. (503) 249-2000. **Includes:** 42 slides with script and handouts. **Content:** This program teaches the basics of sports nutrition including carbohydrate, pre-event eating, and fluids. **Audience:** School-age Athletes, Coaches, Parents

Printed Visuals

Competition Nutrition: A Coach's Guide to Improving Performance. (Brochure) (1992). Available from Western Dairy Council, 12450 North Washington, Thornton, CO 80241. (303) 451-7711 or 800-274-6455.

Drink for Peak Performance. (poster 14" x 24") (1992). Available from Cornell University, Media Services Resource Center, 7 Business and Technology Park, Ithaca, NY 14850. (607) 255-2080.

Eat for Fitness. (Handout) (1992). Available from Cornell University, Media Services Resource Center, 7 Business and Technology Park, Ithaca, NY 14850. (607) 255-2080.

Eat for Fitness. (Poster-14" x 24") (1992). Available from Cornell University, Media Services Resource Center, 7 Business and Technology Park, Ithaca, NY 14850. (607) 255-2080.

Sports Nutrition Handout Packet. Topics include: carbohydrates, fast food, post-event eating and fluids. Available from Sports Nutrition Education

Resource Center, Department of Allied Health (NTE), Slippery Rock University, Slippery Rock, PA 16057. (412) 738-2269.

Sports Nutrition: Resource Packet. (1992). Available from Penn State Nutrition Center, Pennsylvania State University, 417 E. Calder Way, University Park, PA 16802-5663. (814) 865-6323.

Sports Nutrition: Eating Disorders. (handout) (1990). Available from International Center for Sports Nutrition, 502 South 44th Street, Suite 3012-NT, Omaha, NE 68105. (402) 559-5505.

Sports Nutrition Handouts: Camera Ready Fact Sheets. (1992 revised). Topics include: sports nutrition tips, carbohydrate loading, fluids, pre-competition meals, iron, weight loss, weight gain and tips for athletes with diabetes, eating disorders and more. Available from Nancy Clark, Sportsmedicine Brookline, 830 Boylston Street, Brookline, MA 02167. (617) 739-2003.

Periodicals

Sports Science Exchange. Gatorade Sports Science Institute. Quaker Oats Company, P.O. Box 9005, Chicago, IL 60604-9005. (312) 222-7704.

Contacts for Assistance

Local Contacts (Listed in the telephone directory)	Ask for the:
Health Department (city,county,state)	Nutritionist
Hospital	Registered Dietitian
Nutrition Consultant	Sports or Sports Medicine Clinic Nutritionist or Registered Dietitian

National Contacts

American Alliance for Health, Physical Education, Recreation and Dance, Publications and Customer Service, 1900 Association Drive, Reston, VA 22091. (703) 476-3400 or 800-321-0789.

American College of Sports Medicine, P.O. Box 1440, Indianapolis, IN 46206. (317) 637-9200.

Food and Nutrition Information Center, National Agricultural Library, 10301 Baltimore Blvd., Room 304, Beltsville, MD 20705-2351. (301) 504-5719.

Gatorade Sports Science Institute, P.O. Box 9005, Chicago, IL 60604-9005. (312) 222-7704.

International Center for Sports Nutrition, 502 South 44th St., Suite 3012-NT, Omaha, NE 68105. (402) 559-5505.

National Center for Nutrition and Dietetics, 216 W. Jackson Blvd., Suite 800,
Chicago, IL 60606. 800-366-1655.

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Anorexia Nervosa and Bulimia

Articles (in order by date)

"Eating Disorders in NCAA Athletic Programs." Randall W. Dick. *Athletic Training, Journal of the National Trainers Association*, 26(2):137-140. Summer 1991.

"Gender Differences in Eating Behavior and Body Weight Regulation." Barbara J. Rolls, Ingrid C. Fedoroff, and Joanne F. Guthrie. *Health Psychology*, 10(2):133-142. 1991.

"Anorexia Nervosa, Bulimia Nervosa: Causal Theories and Treatment." T. A. Palmer. *Nurse Practitioner*, 15(4):12-18. April 1990.

"I'll Be Happy When I'm Thin Enough: The Treatment of Anorexia Nervosa in Adolescent Literature." Joann Pantanizopoulos. *ALAN Review*, 17(1):9-10. Fall 1989.

"An Overview of the Eating Disorders Anorexia Nervosa and Bulimia Nervosa." D. B. Woodside and P. E. Garfinkel. *Nutrition Today*, 24(3):27-29. May/June 1989.

"Early Manifestations of Eating Disorders in Adolescents: Defining Those at Risk." Lucy B. Adams and Mary-Ann B. Shafer. *Journal of Nutrition Education*, 20(6):307-313. December, 1988.

"Anorexia Nervosa and Related Conditions in Schoolchildren." Paula H. Salmons. *Nutrition and Health*, 4(4):217-225. 1987.

The resources listed are judged to be available and to contain accurate and readable nutrition information. Opinions expressed in the publications do not necessarily reflect the views of the U.S. Department of Agriculture. *Nutri-Topics* replaces the FNIC *Pathfinder* series and is issued in three editions: Consumer, Educator, and Health Professional/Researcher.

Audiovisuals (in order by date)

Mirror, Mirror. (1991). Film Ordering, University of California-Santa Barbara, Santa Barbara, CA 93106. **Includes:** A 26-minute (VHS) videocassette and curriculum guide. **Contents:** This video discusses the topic of how to help a friend with an eating disorder. It features interviews with women who are recovering from an eating disorder and a woman who helped her friend get treatment for anorexia nervosa. **Audience:** Adolescent and young adults.

Food For Thought. (1990). Direct Cinema Limited, Santa Monica, CA 90401. **Includes:** A 30-minute (VHS) videocassette. **Content:** This video presents the story of an adolescent who discovers that her friend has an eating disorder. The themes discussed include eating disorders and nutrition, self-image, personal satisfaction, and parental expectations. **Audience:** Adolescents.

Nutrition and Eating Disorders in Athletics. (1990). Karol Video, 350 North Pennsylvania Avenue, P.O. Box 7600, Wilke-Barre, PA 18773-7600. **Includes:** A three-part (VHS) videocassette series. The titles are (1) "Afraid to Eat: Eating Disorders and the Student Athlete" (17 minutes), (2) "Out of Balance: Nutrition and Weight" (16 minutes), and (3) "Eating Disorders: What Can I Do?" (15 minutes). **Content:** The material covers the problems created by the drive to lower weight without regard for proper diet, the devastating consequences of eating disorders, and what coaches, teachers, and others can do to help the student-athlete with an eating disorder. A comprehensive set of printed materials suitable for copying accompanies the series. Supplemental materials include a hand-out master on eating disorders, nutrition, weight loss, and amenorrhea, and a resource referral list. **Audience:** Athletes with an eating disorder, coaches, health professionals, parents, and teachers.

Dying To Be Thin. (1989). Carle Medical Communications, 110 West Main Street, Urbana, IL 61801-2700. **Includes:** A 25-minute (VHS or Beta) videocassette. **Content:** This video presents the personal experiences of both males and females recovering from eating disorders. Additional insight is provided by physicians and counselors who discuss the causes of eating disorders, early warning signs, and physical and psychological effects of anorexia nervosa and bulimia nervosa. **Audience:** Adolescents, adults, counselors, and health professionals.

Eating Disorders: You Are Not Alone. (1989). Meridian Education Corporation, 236 East Front Street, Bloomington, IL 61701. **Includes:** A 28-minute (VHS or Beta) videocassette. **Content:** This video discusses the prevalence, underlying symptoms, and treatment of anorexia and bulimia. Individuals recovering from an eating disorder share their experiences. **Audience:** Adolescents, young adults, and parents.

Learning About Eating Disorders. (1989). Churchill Films, 12210 Nebraska Avenue, Los Angeles, CA 90025. A five-part (VHS) videocassette series; each 15-16 minutes. The titles are (1) "Starving and Binging," (2) "Anorexia Nervosa," (3) "Bulimia," (4) "Getting Help," and (5) "Changing Behavior." **Content:** These videos provide information on the indications of anorexia and bulimia, the associated medical disorders, and treatment and recovery. **Audience:** Adolescents, adults, and parents.

Real People: Coping with Eating Disorders. (1989). Sunburst Communications, Department AW, 101 Castleton Street, Pleasantville, NY 10570. **Includes:** A 27-minute (VHS) videocassette and a 37-page teacher's guide. **Content:** This video presents the stories of three young people recovering from eating disorders. **Audience:** Adolescents and adults.

Real People: Meet a Teenage Anorexic. (1989). Sunburst Communications, Department AW, 101 Castleton Street, Pleasantville, NY 10570. **Includes:** An 18-minute (VHS) videocassette and a 26-page teacher's guide. **Content:** This video is designed to help viewers understand the pathology underlying anorexia by providing an in-depth picture of a young anorexic and her struggle to overcome her compulsion to refuse food. **Audience:** Adolescents and adults.

Eating Disorders and Athletic Performance. (1988). International Center for Sports Nutrition, 502 South 44th Street, Suite 3012, Omaha, NE 68105. **Includes:** A 15-minute (VHS) videocassette. **Content:** This video discusses factors precipitating anorexia and bulimia, indicators of an eating disorder, psychological effects of eating disorder behaviors, and proper methods for weight loss. **Audience:** Athletes, coaches, and trainers.

FoodFright. (1988). Direct Cinema Limited, Santa Monica, CA 90401. **Includes:** A 30-minute (VHS) videocassette. **Content:** The video presents an adaptation of a musical cabaret using parody, personal stories, and facts to address the damaging physical and psychological side effects of eating disorders. **Audience:** Adults.

Anorexia and Bulimia. (1987). Films for the Humanities and Sciences, Princeton, NJ 08540. **Includes:** A 19-minute (VHS) videocassette. **Content:** The video discusses some the characteristics of persons with eating disorders. Women who are recovering share their feelings about eating, being thin, how the problem evolved, and the therapy they received. The physiological and psychological effects of the disease are reviewed. **Audience:** Adults.

Books (in order by date)

Everybody's Doing It . . . And Here's How To Quit. Dorie F. Pass. Phoenix, AZ: Golden One Publishing. 1990. 152 pp.

Males With Eating Disorders. Arnold E. Anderson (Ed.). New York, NY: Brunner/Mazel Publishers. 1990. 264 pp.

Overcoming Fear of Fat. Laura S. Brown and Ester D. Rothblum (Eds.). New York, NY: Harrington Park Press. 1989. 103 pp.

The Bulimic College Student: Evaluation, Treatment and Prevention. Leighton C. Whitaker and William N. Davis (Eds.). New York, NY: Haworth Press. 1989. 340 pp.

A Parent's Guide To Eating Disorders. Brett Valette. New York, NY: Walker Publishing Company. 1988. 190 pp.

Surviving an Eating Disorder: New Perspectives and Strategies for Family and Friends. Michele J. Siegal, J. Brisman, and M. Weinshel. New York, NY: Harper and Row. 1989. 256 pp.

Bulimarexia: The Binge/Purge Cycle. 2nd edition. Marlene Bosking and C. William White. New York, NY: Norton. 1987. 284 pp.

Dying To Be Thin: Understanding and Defeating Anorexia Nervosa and BulimiaA Practical, Lifesaving Guide. Ira M. Sacker and Marc A. Zimmer. New York, NY: Warner Books, Inc. 1987. 266 pp.

How Schools Can Help Combat Student Eating Disorders. Michael Levine. Washington, DC: National Education Associate. 1987. 279 pp.

Teaching Tools (in order by date)

Anorexia Nervosa and Bulimia: A Resource Booklet. (handout) Available from the Montgomery County Government, Nutrition Services, Department of Health, 1001 Maryland Avenue, Rockville, MD 20850.

Eating Disorders. (handout). Available from the American College Health Association, 1300 Piccard Drive, Suite 200, Rockville, MD 20850.

Eating Disorders: Anorexia and Bulimia. (handout) Available from the American Dietetic Association, 216 West Jackson Boulevard, Suite 800, Chicago, IL 60606-5995.

Sport Nutrition: Eating Disorders. (handout) Available from the International Center for Sport Nutrition, 502 South 44th Street, Suite 3012, Omaha, NE 68105.

Contacts for Assistance

Local Contacts (Listed in the telephone directory)	Ask for the:
Health Department (city, county, state)	Nutritionist
Hospital	Registered Dietitian
Nutrition Consultant	Registered Dietitian

National Contacts

American Anorexia/Bulimia Association, Inc. 418 East 76th Street, New York, NY 10021. (212) 734-1114.

Anorexia Nervosa and Related Eating Disorders, P.O. Box 5102, Eugene, OR 97405. (503) 344-1144.

Food and Nutrition Information Center, National Agricultural Library, U.S.D.A., Room 304, Beltsville, MD 20705-2351. (301) 344-3719.

International Association of Eating Disorders Professionals, 34213 Coast Highway, Suite E, Dana Point, CA 92629. (714) 248-1150.

International Center for Sports Nutrition, 502 South 44th Street, Suite 3012, Omaha, NE 68015. (402) 559-5505.

National Association of Anorexia Nervosa and Associated Disorders, Box 7 Highland Park, IL 60035. (708) 831-3438.

National Center for Education in Maternal and Child Health, 38th & R Streets N.W., Washington, DC 20057. (202) 625-8400.

National Center for Nutrition and Dietetics, The American Dietetic Association, 216 West Jackson Boulevard, Suite 800, Chicago, IL 60606-5995. (312) 899-0040, extension 4853.

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Weight Control and Obesity

Overview (in order by year)

Encyclopedia of Obesity and Eating Disorders. Dana K. Cassell. New York: Facts On File. 1993. 400 pp.

Nutrition Monitoring in the United States. Chartbook I: Selected Findings from the National Nutrition Monitoring and Related Research Program. Interagency Board of Nutrition Monitoring and Related Research. Hyattsville, MD: U.S. Government Printing Office. Sept. 1993. pp. 5-9, 62, 65-68.

Obesity: Theory and Therapy. Albert J. Stunkard and Thomas A. Wadden. New York: Raven Press. 1993. 377 pp.

"When your obese patient can't lose weight." Karen M. Neil and Robert F. Kushner. *Postgraduate Medicine*, 93(2):155-162, 168-169, 172. 1993.

Obesities. Jean Vague. London, England: J. Libbey. 1991. 153 pp.

Straight Talk about Weight Control. Lynn J. Bennion, Edwin L. Bierman, and James M. Ferguson. Mount Vernon, NY: Consumers Union. 1991. 351 pp.

Perceptions (in order by year)

"The relationship between body weight concerns and adolescent smoking." Diane E. Camp, Robert C. Klesges, and George Relyea. *Health Psychology*, 12(1):24-32. 1993.

"Adolescents' perceptions of relative weight and self-reported weight loss activities." Michael Felts, et al. *Journal of School Health*, 62(8):372-376. 1992.

"A multivariate analysis of the attitudinal and perceptual determinants of completion of a weight-reduction program." Charlotte A. Pratt, Clark Gaylord, and Gerald W. McLaughlin. *Journal of Nutrition Education*, 24(1):14-20. 1992.

"Self-reported and measured weights and heights of participants in community-based weight loss programs." Linda R. DelPrete, et al. *Journal of The American Dietetic Association*, 92(12):1483-1486. 1992.

"Body image satisfaction, dieting beliefs, and weight loss behaviors in adolescent girls and boys." Susan J. Paxton, et al. *Journal of Youth and Adolescence*, 20(3):361-379. 1991.

"Weight perceptions and dietary practices of black, low-income adolescents." Margaret B. Balentine. *School Food Service Research Reviews*, 14(2):103-107. 1990.

Pathogenesis (in order by year)

"Glycogen storage: illusions of easy weight loss, excessive weight regain, and distortions in estimates of body composition." Stephen N. Kreitzman, Ann Y. Coxon, and Kalman F. Szaz. *American Journal of Clinical Nutrition*, 56(suppl 1):292S-293S. 1992.

"The problem of obesity: fundamental concepts of energy metabolism gone awry." Judith G. Dausch. *Critical Reviews in Food Science and Nutrition*, 31(4):271-198. 1992.

Prevalence (in order by year)

"Prevalence of obesity in American Indians and Alaska Natives." Brenda A. Broussard, et al. *American Journal of Clinical Nutrition*, 53:1535S-1542S. 1991.

"The 10-year incidence of overweight and major weight gain in US adults." David F. Williamson, et al. *Archives of Internal Medicine*, 150:665-672. 1990.

Classification, Definition, or Measurement (in order by year)

"Use of skinfolds and bioelectrical impedance for body composition assessment after weight reduction." Irma J.M. Paijmans, Kristine M. Wilmore, and Jack H. Wilmore. *Journal of the American College of Nutrition*, 11(2):145-151. 1992.

Genetics and Environment (in order by year)

"Differences in postpartum weight retention between black and white mothers." Jennifer D. Parker and Barbara Abrams. *Obstetrics & Gynecology*, 81(5, pt. 1):768-774. 1993.

"Physical activity in children and youth: relationship to obesity." Russell R. Pate. *Contemporary Nutrition*, 18(2):1-2. 1993.

"Models for dietary and weight change in African-American women: identifying cultural components." Shiriki K. Kumanyika, Christiaan Morssink, and Tanya Agurs. *Ethnicity and Disease*, 2(2):166-75. Spring 1992.

"Postmenopausal hormone replacement therapy prevents central distribution of body fat after menopause." Jens Haarbo, et al. *Metabolism*, 40(12):1323-1326. 1991.

"The contributions of income, education and changing marital status to weight change among US men." Henry S. Kahn and David F. Williamson. *International Journal of Obesity*, 14(12):1057-1068. 1990.

"Does emotional eating interfere with success in attempts at weight control?" A. J. Blair, V. J. Lewis, and D. A. Booth. *Appetite*, 15(2):151-157. 1990.

"Evidence for a secular change in obesity, height, and weight among Navajo indian schoolchildren." Jonathan R. Sugarman, Linda L. White, and Timothy J. Gilbert. *American Journal of Clinical Nutrition*, 52:960-966. 1990.

Mortality and Morbidity (in order by year)

"Beneficial health effects of modest weight loss." David J. Goldstein. *International Journal of Obesity*, 16(6):397-415. 1992.

Health Risks of Obesity: 1993 Special Report. Frances M. Berg. Hettinger, ND: Obesity & Health. 1992. 130 pp.

"Long-term morbidity and mortality of overweight adolescents: a follow-up of the Harvard Growth Study of 1922 to 1935." Aviva Must, et al. *New England Journal of Medicine*, 327(19):1350-1355. 1992.

Treatment Methods and Outcomes (in order by year)

Eat More, Weigh Less: Dr. Ornish's Life Choice Program for Losing Weight Safely While Eating Abundantly. Dean Ornish. New York: Harper Collins. 1993. 425 pp.

"The healthy worker project: a work-site intervention for weight control and smoking cessation." Robert W. Jeffery, et al. *American Journal of Public Health*, 83(3):395-401. 1993.

"High fiber diet in the treatment of obesity and hypercholesterolemia." Lalita Kaul and Joseph Nidiry. *Journal of the National Medical Association*, 85(3):231-232. 1993.

"Hypertension in obese patients." Mahendr S. Kochar. *Postgraduate Medicine*, 93(4):193-195, 199-200. 1993.

"Intense sweeteners: effects on appetite and weight management." International Food Information Council. *IFIC Review*, 4 pp. 1993.

"Nursing guide to good nutrition & sensible weight control." *Nursing*, 23(5):67-69. 1993.

"Nutrition education research in weight management among adults." Ellen S. Parham. *Journal of Nutrition Education*, 25:258-268. 1993.

"Nutrition in the '90s: setting the table for the future." *The Bariatrician*, Summer 1993.

"Obesity and the implications of weight loss (is there death after success?)." Gary R. Cutter. *Perspectives in Applied Nutrition*, 1(1):3-13. 1993.

"A paradigm shift from weight loss to healthy living." Linda Omichinski. *Obesity and Health*, pp. 48-59. May/June 1993.

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"Understanding and treating human obesity: what's new." James O. Hill. *Food & Nutrition News*, 65(5). 1993.

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"Characteristics of controlled studies of patient education and counseling for prevention health behaviors." Denise G. Simons-Morton, et al. *Patient Education and Counseling*, 19(2):175-204. 1992.

"Child and adolescent obesity: the nurse practitioner's use of the SHAPEDOWN method." Laurel M. Melin and Lisa Frost. *Journal of Pediatric Health Care*, 6(4):187-193. 1992.

"Current treatment of obesity: a behavioral medicine perspective." Vincent Pear, Matthew M. Clark, and David B. Abrams. *Rhode Island Medicine*, 75(10):477-481. 1992.

"Effective weight maintenance techniques of healthy, normal-weight, middle-aged women." Sarah F. Stallings and Patricia Giblin Wolman. *Topics in Clinical Nutrition*, 7(3):56-62. 1992.

"Family versus individually oriented intervention for weight loss in Mexican American women." Jennifer H. Cousins, et al. *Public Health Reports*, 107(5):549-555. 1992.

"Long-term outcome of a self-help very-low-calorie-diet weight-loss program." Jacqueline S. Cox, et al. *American Journal of Clinical Nutrition*, 56(1 suppl.):279S-280S. 1992.

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"Lose weight and win: a church-based weight loss program for blood pressure control among black women." Shiriki K. Kumanyika and Jeanne B. Charleston. *Patient Education and Counseling*, 19(1):19-32. 1992.

Methods for Voluntary Weight Loss and Control: National Institutes of Health Technology Assessment Conference Program Amd Abstracts + Statement. National Institutes of Health Technology Assessment Conference March 23-April 1, 1992. NIH Nutrition Coordinating Committee and the NIH Office of Medical Applications of Research. Bethesda, MD: National Institute of Health. 1992. 168 pp. + 29 pp.

"Obesity: a quartet of approaches." C. Wayne Callaway, et al. *Patient Care*, 26(14):157-164, 171-172, 174, 183-184, 186-188, 190, 193-196, 199. 1992.

"Obesity and efforts to lose weight." Elliot Danforth, Jr. and Ethan A.H. Sims. *The New England Journal of Medicine*, 327(27):1947-1948. 1992.

"Outcomes of weight-loss programs." Jeanine C. Cogan and Esther D. Rothblum. *Genetic, Social, and General Psychology Monographs*, 118(4):385-415. 1992.

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"A pilot weight control program for Hispanic women." Suzanne B. Domel, et al. *Journal of the American Dietetic Association*, 92(10):1270-1271. 1992.

"Undieting: a program of help people stop dieting." Janet Polivy and C. Peter Herman. *International Journal of Eating Disorders*, 11(3):262-268. 1992.

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"Weight loss, body composition and risk factors for cardiovascular disease in obese children: long-term effects of two treatment strategies." Outi Nuutinen and Mikael Knip. *Journal of the American College Nutrition*, 11(6):707-714. 1992.

"Worksite nutrition education can lower total cholesterol levels and promote weight loss among police department employees." Margaret E. Briley, Deanna H. Montgomery, and John Blewett. *Journal of the American Dietetic Association*, 92(11):1382-1384. 1992.

"Ethics of obesity treatment: implications for dietitians." Patricia W. Pace, Mary Pat Bolton, and Rebecca S. Reeves. *Journal of the American Dietetic Association*, 91(10): 1258-1260. 1991.

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"Nutritional profiles of selected college females in a 15-week exercise and weight-control class." Timothy J. Quinn and Michael Jenkins. *Health Values*, 15(3):34-41. 1991.

"Obesity treatment: The high cost of false hope." Susan C. Wooley and David M. Garner. *Journal of the American Dietetic Association*, 91(10):1248-1251. 1991.

"Summary document of nutrition intervention in obesity." Joni Geppert and Patricia L. Splett. *Supplement to the Journal of the American Dietetic Association*, 91(11 suppl.):S31-S35. 1991.

"A technique for incorporating psychological principles into the nutrition counseling of clients." Marian R. Stuart and Margaret D. Simko. *Topics in Clinical Nutrition*, 6(4):51-60. 1991.

"Weight control: attitudes of dieters and change agents." Ellen S. Parham, et al. *Journal of Home Economics*, 83(1):6-12. 1991.

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Obesity & Health. Healthy Living Institute, 402 S. 14th Street, Hettinger, ND 58639. (800) 633-4931.

The Weight Control Digest. American Health Publishing Company, 1555 W. Mockingbird Lane, Suite 203, Dallas, TX 75235. (800) 736-7323.

Weight Control Programs for Instructors (in alphabetical order by title)

The Balancing Act: Nutrition & Weight Guide. Georgia G. Kostas. Dallas, TX: Balancing Act. 1993. 320 pp.

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Diet & Weight Loss. Larry A. Richardson, M.D. Available from Order Department, 2031 Humble Place Drive, Humble, TX 77338.

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Children and Weight: What's a Parent to Do? (Que Deben Hacer Los Padres De Los Ninos Que Pesan Mucho) (For low literacy audiences). Cooperative Extension University of California, Division of Agriculture and Natural Resources. 1993. Available from ANR Publications, University of California, 6701 San Pablo Avenue, Oakland, CA 94608-1239. (415) 642-2431.

Exchange Lists for Weight Management. The American Dietetic Association and American Diabetes Association. Available from American Diabetes Association, Inc., Diabetes Information Service Center, 1660 Duke Street, Alexandria, VA 22314. (703) 549-1500.

Exercise and Weight Control. The President's Council on Physical Fitness and Sports. Available from President's Council on Physical Fitness and Sports, 701 Pennsylvania Avenue, N.W., Suite 250, Washington, DC 20004. (202) 272-3421.

Facts about Fat Substitutes. Nutrition Fact Sheet. National Center for Nutrition and Dietetics. Available from National Center for Nutrition and Dietetics, 216 West Jackson Blvd, Chicago, IL 60606-6995. (800) 366-1655.

The Facts about Weight Loss Products and Programs. Federal Trade Commission, Food and Drug Administration, National Association of Attorneys General. Available from Food and Drug Administration, Consumer Affairs and Information, 5600 Fishers Lane, HFC-110, Rockville, MD 20857. (301) 443-3170.

An FDA Guide to Dieting. Ruth Papazian. FDA Consumer. Available from Department of Health and Human Services, Public Health Service, Food and Drug Administration, Office of Public Affairs, 5600 Fishers Lane, Rockville, MD 20857.

Food Choices for Good Health (Escoja Alimentos Sanos). Cooperative Extension University of California, Division of Agriculture and Natural Resources. Available from ANR Publications, University of California, 6701 San Pablo Avenue, Oakland, CA 94608-1239. (415) 642-2431.

The Healthy Weigh: A Practical Food Guide. Maureen Callahan. Available from The American Dietetic Association, 216 West Jackson Blvd., Chicago, IL 60606-6995. (800) 877-1600, ext. 5000.

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Managing Your Weight for Better Health. The American Dietetic Association. Chicago, IL: The Association. 1993. Avaialble from The American Dietetic Association, 216 West Jackson Blvd. Chicago, IL 60606-6995. (312) 899-4853.

Que Debe Hacer Usted Para Perder Peso? What Should You Do to Lose Weight. The American Dietetic Association. Available from National Center for Nutrition and Dietetics, 216 W. Jackson Blvd., Chicago, IL 60606-6995. (800) 366-1655.

Skimming the Fat: A Practical Food Guide. The American Dietetic Association. Available from The American Dietetic Association, 216 W. Jackson Blvd., Chicago, IL 60606-6995. (800) 877-1600, ext. 5000.

Weight Control Guide for Smokers Trying to Quit. Jill Stern Weisenberger, Laura K. Guyer, and Lynn B. Bailey. Available from Journal of Nutrition Education, 25:367D. 1993.

The Weight Kit: A Four-Step Guide to Losing Weight and Keeping it off. Stanford Center for Research in Disease Prevention. Available from Health Promotion Resource Center, Stanford Center for Research in Disease Prevention, Stanford University School of Medicine, 100 Welch Road, Palo Alto, CA 94304-1885. (415) 723-0003.

Weight Loss Readiness Quiz. Nutrition Fact Sheet. Available from National Center for Nutrition and Dietetics, 216 W. Jackson Blvd., Chicago, IL 60606-6995. (800) 366-1655.

Audiovisuals (in alphabetical order by title)

The 7 Most Popular Weight Management Myths (1993). Los Angeles, CA: National Health Video, Inc. (310) 472-2275. **Includes:** 10 min. (VHS) videocassette. **Content:** Discusses the most popular myths and truths about weight control. **Audience:** Consumers.

Beyond Covert Bailey's Fit or Fat: the Covert Bailey Video Collection (1993). Alexandria, VA: PBS Home Video. (703) 739-5380 or (800) 344-3337. **Includes:** 7 hours in 13 segments (VHS) 4 videocassettes. **Content:** Discusses facts about diet and exercise in a humorous way. **Audience:** Consumers.

Break Your Behavior Chains (1990). Vivian Rosenberg, et al. Los Angeles, CA: National Health Video, Inc. (310) 472-2275. **Includes:** 17 min. (VHS) videocassette. **Content:** Discusses behavior change tips in grocery shopping style, eating style and lifestyle. **Audience:** Consumers.

Children and Weight: What's a Parent to do? (1993). University of California Cooperative Extension. Davis, CA: Cooperative Extension. Distributed by: Visual Media, UC Davis, CA 95616. **Includes:** 12 min. (VHS) videocassette + 3 booklets. **Content:** Video offers sound advice and practical suggestions concerned about preventing or treating childhood obesity. The authors encourage nconditional love and acceptance of the child, as well as sensible eating and a physically active lifestyle. **Audience:** Health professionals and caregivers.

Eat More, Weigh Less (1993). Dr. Dean Ornish. New York, NY: Harper Audio. (212) 207-7000. **Includes:** 90 min. sound cassette + 5 recipe cards. **Content:** Discusses how to lose weight safely while eating a lot of food. **Audience:** Consumers.

Eating Healthy for Weight Control (1990). Cable News Network Series. Atlanta, GA: Turner Multimedia. (404) 827-1700. **Includes:** 24 min. (VHS) videocassette + 1 guide. **Content:** Successful nutrition and fitness strategies for losing weight and keeping it off. **Audience:** Consumers.

A Fare That Fits: a Lifestyle for a Thinner You. Cleveland Clinic Cookbook a Fare That Fits (1989). Jacques Pepin. Cleveland, OH: Cleveland Clinic Foundation. **Includes:** 60 min. (VHS) videocassette + 1 book. **Content:** The video has Chef Jacques Pepin demonstrating the creative preparation of recipes that taste good yet are low in calories, Dr. John Bergfeld discussing the benefits of exercise in a weight-loss plan, Dr. Garland T. DeNelsky telling how to change eating habits, and Karen Miller-Kovach translating nutrition information into acceptable dietary guidelines. **Audience:** Consumers.

Fat City (1990). Robert Dean and Roger Bingham. Olney, PA: Bullfrog Films. (800) 543-FROG. **Includes:** 28 min. (VHS) videocassette + teacher's guide. **Content:** Takes a lighthearted approach to a serious problem. As you enter *Fat City*, you learn how eating habits based on stone-age desires for fat, sweets, and salt, combined with genetics and environment, have contributed to weight control problems. **Audience:** Consumers.

The Food Exchange System. (Other Title: *Exchange System for Weight Management, Introduction to the Exchange System for Weight Management*) (1990). Los Angeles, CA: National Health Video. 20 min. (VHS) videocassette. **Content:** The video program shows what is meant by a food exchange system and how to manage good eating without counting calories, based on a system of equal values for a balanced, planned daily intake. It discusses the exchanges in six food groups, eg. starch/bread, meat, vegetables, fruit, milk, and fats, plus the free food list. The menu planning as a budget is discussed with the exchanges as the options in meeting the budget. **Audience:** Consumers.

How to Keep a Food Diary (1990). Ed Weinstock. Los Angeles, CA: National Health Video, Inc. (310) 472-2275. **Includes:** 12 min. (VHS) videocassette. **Content:** Discusses the importance of a food diary in a weight reduction plan and how to record food amounts properly. **Audience:** Health professionals and Consumers.

Managing Your Weight Without Dieting (1994). Evanston, IL: Altschul Group Corp. (800) 421-2363. **Includes:** 25 min. (VHS) videocassette + teaching guide. **Content:** Program explores why young people are prone to eating high-fat diets and why they avoid exercise. It also explores why teens are obsessed with thiness and how this could lead to eating disorders.

Nobody's Perfect: How to Cope with Relapse (1991). Los Angeles, CA: National Health Video, Inc. (310) 472-2275. **Includes:** 16 min. (VHS) videocassette. **Content:** Gives suggestions for coping with situations causing relapses from a diet such as how to deal with a food craving or how to overcome guilt from eating something not on a diet. Strongly suggests keeping an eating behavior diary to know yourself and your weaknesses, to identify high risk situations and to plan ahead for damage control. **Audience:** Consumers.

Overeating, an American Obsession (1989). Phoenix, AZ: Johannes Productions; Distributed by Urbana, IL: Carle Medical Communications. **Includes:** 25 min. (VHS) videocassette + 2 viewer's guides. **Content:** This film explores some of the reasons why people overeat and shows that people with compulsive eating habits can develop and maintain a successful weight management program. **Audience:** Consumers.

Thin Dining (1990). Vantage-Point Productions. Los Angeles, CA: National Health Video, Inc. (310) 472-2275. **Includes:** 23 min. (VHS) videocassette. **Content:** Discusses ways of maintaining a low fat diet and eating healthy meals when dining outside the home, in restaurants, at parties, or on vacation. **Audience:** Consumers.

The Three Friends. (Other Title: *Las Tres Comadres: A Program on Overweight as a Risk for Hypertension for the Minority Peer Educator Program*) (1990). College Station, TX: Texas Agricultural Extension Service, Texas A & M University System. **Includes:** 1 videocassette, 1 program manual, 20 training activities, 1 script, 1 game, 17 posters, + 4 duplication masters. **Content:** An educational kit focusing on obesity and high blood pressure for Hispanic elderly. The primary goal is to bring relevant health, nutrition and mental health information to older minority participants of senior nutrition sites. **Audience:** Health professionals and Consumers.

Wise Weights: Consumer's Guide to Weight Management (1991). Bloomington, MN: Bloomington Heart and Health Program. 28 slides. **Content:** Offers a permanent weight control program that emphasizes life-style changes rather than short-term diets. Participants design their own lower-calorie eating plan. New attitudes and habits are gained about food, eating, and exercise. **Audience:** Consumers.

Contacts for Assistance

Local Contacts (listed in telephone directory)	Ask for the:
Dietetic Association (state or regional chapter)	Dietitian
Heart Association (city, state)	Health Educator
Extension Service (county or state)	Home Economist or Food and Nutrition Specialist
Health Department (city, county, state)	Public Health Nutritionist
Hospital	Dietitian
College or University	Nutrition Instructor

National Contacts:

Calorie Control Council, 5775 Peachtree-Dunwoody Road, Suite 500-G, Atlanta, GA 30342. (404) 252-3663.

Food and Nutrition Information Center, National Agricultural Library, USDA, Room 304, 10301 Baltimore Blvd., Beltsville, MD 20705-2351. (301) 504-5719.

National Council Against Health Fraud, P.O. Box 1276, Loma Linda, CA 92354. (909) 824-4690.

National Health Information Center, ODPHP, P.O. Box 1133, Washington, DC 20013. (800)-336-4797. In Maryland (301) 565-4167.

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The resources listed contain accurate nutrition information and are available nationwide. Opinions expressed in the publications do not necessarily reflect the views of the U.S. Department of Agriculture. This *Nutri-Topics* is issued in three editions: Consumer, Educator, and Health Professional/Researcher.

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Handouts

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Sports **Nutrition**
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SPORTS NUTRITION TIPS

Without a doubt, *what* you eat and *when* you eat affects your athletic performance. A wisely selected sports diet helps you feel stronger, train harder and compete better. The following sports nutrition tips can help you eat to win.

FUEL: The best muscle fuels are carbohydrates -- either *simple sugars* (such as the naturally occurring sugars in fruits and juices) or *complex carbohydrates* (the starches in whole wheat bread, brown rice, bran cereal, oatmeal and other grains). These carbohydrates provide not only energy but also important vitamins and minerals. *Refined sugars* (i.e. soft drinks, candy) also fuel muscles but they lack the "spark plugs" that help your engine run smoothly.

You store *only* carbohydrates - not protein or fats - in your muscles in the form of sugar called *glycogen.* During hard exercise, you burn this glycogen for energy. When you deplete your glycogen stores, as can happen during repeated days of hard training and a low carbohydrate diet, you feel overwhelmingly exhausted. Eating high carbohydrate foods (cereal, pancakes, bread, fruit, vegetables, potato, pasta) on a *daily* basis can help you train harder and compete better.

QUICK ENERGY: Eating lots of sweets and sugary foods for "quick energy" before you exercise may hurt your performance. Here's why: After you eat any kind of concentrated sugar (i.e. dried fruit, juices, soft drinks, jelly beans, etc.), your body secretes insulin, a hormone that carries sugar from your blood into the muscles. Exercise, like insulin, also helps carry sugar into the muscles. The combined effect of insulin with exercise can cause your blood sugar to drop abnormally low. You may experience hypoglycemia (low blood sugar) and feel light-headed, shaky, tired and uncoordinated.

If you are hungry, droopy and craving a quick energy boost prior to exercise, you don't have to eat sugar for energy. A simple snack of crackers, fruit or bread can perk you up without risking negative hypoglycemic effects. Better yet, *prevent* the need for an energy boost! Simply eat a hearty breakfast and/or lunch that fuels you up earlier in the day so that you won't be running on fumes in the afternoon. These meals will be digested in plenty of time for the afternoon or evening workout. You'll be ready for action, rather than hungry and tired.

FLUIDS: Whereas lack of carbohydrates can hurt your performance, lack of fluids can endanger both performance and health. To prevent yourself from becoming dehydrated, drink lots of liquids before, during and after strenuous exercise. Water is always safe before exercise; water and/or sports drinks during exercise; water, sports drinks or juices afterwards. To tell if you've had adequate fluids, simply monitor your urine. It should be clear-colored and voluminous, *not* dark and concentrated.

PRE-COMPETITION MEALS: Whenever possible, you should eat carbohydrate-rich meals *the day before* the competition. This allows you plenty of time to digest the carbohydrates and store the energy in your muscles as glycogen. Before a strenuous morning event (such as competing in a 9 AM road-race), you should also eat a light breakfast or small snack 1-3 hours prior to competing. This will boost your blood sugar and enhance stamina and endurance. Before an afternoon or evening competition, eat a hearty breakfast (cereal, pancakes, waffles, bagels), a lighter lunch (soup, sandwich) and a dinner or snack as tolerated. Since each athlete has different tolerances to pre-exercise food, you need to *experiment during training* to determine the quantity and type of food that works best for you.

Although many athletes believe they should exercise on an empty stomach, current research suggests that a pre-exercise snack actually enhances stamina and endurance. Some popular choices include cereal with lowfat milk, 1-2 slices of toast or some plain crackers. Avoid large, fatty meals (the traditional steak-and-eggs breakfast) that tend to sit heavily in the stomach.

RECOVERY FOODS: You should eat carbohydrate-rich fluids and foods as soon as tolerable (at least-within one to two hours after hard exercise) to replace the glycogen that you burned off. Muscles are most receptive to refueling at this time. A simple post-exercise refueler might be fruit juice - a rich source of not only fluids and carbohydrates but also potassium and vitamins.

Remember that *only* carbohydrates quickly refuel your muscles and prepare you for tomorrow's workout. Hence, resist the greasy burger with french fries for your recovery feast; choose instead carbohydrate-rich thick-crust pizza with single cheese and veggie toppings, or a dinner that focuses on potato, bread, vegetables, juices and other carbohydrates.

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TOP SPORTS FOODS: SOME HEALTHFUL CHOICES

When you are training hard, juggling school, work, exercise and social activities *plus* trying to eat healthfully, you may feel frustrated that you have no time to eat the proverbial "three square meals" every day. Never-the-less, you *can* maintain a healthful diet. The trick is to eat a variety of nutrient-dense, lowfat snacks and meals-on-the-run.

The following list includes foods that you can easily find in a convenience store, sandwich shop or salad bar, or can keep stocked at home. These nourishing choices invest in your health within a moderate to low calorie price. Since none are nutritionally complete, you need to choose a variety of foods in order to get a balance of the vitamins, minerals, carbohydrates and proteins necessary for top performance and good health.

FOOD	IMPORTANT NUTRIENTS	COMMENTS
Milk, yogurt lowfat	Calcium, protein riboflavin	•Plan to eat lowfat dairy products 2-4 times each day for calcium, a mineral important throughout lifetime to maintain strong bones. Pizza (with lowfat mozzarella cheese) is another calcium-rich choice.
Broccoli	Vitamins A, C	•One stalk (cooked) offers 100% RDA for vitamin C. Frozen and fresh are nutritionally similar, since freezing doesn't destroy the vitamin C.
Spinach	Vitamins A, C, folic acid	•Add to salads, for more nutrients than offered by pale lettuce. Keep frozen spinach stocked at home for a quick dinner vegetable.
Green peppers	Vitamin C	•Half a pepper offers 100% RDA for Vitamin C. Add to salads, pizza; munch on a raw pepper for a low-calorie snack.
Tomatoes	Vitamins A, C, potassium	•Boost intake by adding sliced tomatoes to sandwiches; choose foods with tomato sauce (pizza, pasta, etc.); drink tomato juice.
V-8 Juice	Vitamins A, C, potassium	•An easy, cook-free way to get nutrients from eight vegetables. Keep small cans stocked for a snack or lunch-time beverage.
Baked potato	Potassium, Vitamin C carbohydrates	•Be sure to eat the skin; it contains 75% of the vitamin C. For a low-calorie topping, add yogurt. Or mash the baked potato with milk to add moistness without the fat and calories of butter or sour cream.
Orange juice, oranges	Vitamin C, potassium folic acid, carbohydrates	•Six ounces (fresh or from frozen) offers 100% RDA of Vitamin C. A great post-exercise "recovery food" for potassium, carbohydrates, fluid. Orange juice is nutritionally superior to many other fruit juices.
Bananas	Potassium, carbohydrates vitamin C	•To prevent over-ripening, store bananas in the refrigerator. Their skin may turn black, but the fruit will be fine. Add bananas to cereal; eat with peanut butter and a glass of milk for a balanced meal-on-the-run.
Cantaloupe	Vitamins C, A	•Half a small melon offers 100% RDA of Vitamin C for very few calories. Enjoy with lowfat cottage cheese for a quick, lite lunch or snack.
Chicken, turkey	Protein	•Thigh- and leg-meat has more iron and zinc than breast-meat. To reduce fat, calories and cholesterol, remove the skin.
Lean beef	Protein, iron, zinc	•Beef is among the best sources of iron and zinc. Avoid fatty meats, i.e., choose a lean roast beef sandwich, rather than a greasy hamburger.
Fish, tuna	Protein, fish-oil	•The oil in salmon, albacore tuna, sardines protects against heart disease. Avoid fried fish; use low-fat mayonnaise with tuna, if possible.
Bran cereal, enriched	Fiber, carbohydrates iron, B-vitamins	•Bran is excellent for fiber (to help prevent constipation). Select "fortified" and "enriched" cereals for the most iron; drink orange juice with cereal to enhance iron absorption.
Muffins, bran, corn	Carbohydrates, B-vitamins fiber	•Preferable to doughnuts or breakfast pastry. Try to buy lowfat whole wheat, corn or bran muffins, rather than cake-like ones. Top with jelly (rather than butter) for extra carbohydrates and moistness.
Bread, bagels, whole grain	Carbohydrates, B-vitamins fiber	•Dark, whole-grain breads (rye, whole wheat, oatmeal, etc.) are preferable to breads made with refined white flour. Breads are *not* fattening if you limit butter, margarine, cream cheese and mayonnaise.
Pizza, thick crust	Calcium, protein, Vitamin A carbohydrates	•Of fast foods, pizza with thick-crust, single-cheese, vegetable toppings (*not* pepperoni, sausage!) is preferable to burgers. If the pizza is oily, blot off the grease with a napkin.
Popcorn, air-popped	Carbohydrates, fiber	•A wholesome, lowfat snack that's preferable to greasy chips. Be cautious of even "lite" commercial brands of popcorn - they can be half-fat.

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SAMPLE HIGH CARBOHYDRATE RESTAURANT MEALS

Carbohydrates are important for a high performance diet because *only* carbohydrates get stored in the muscles as glycogen (the fuel you need during intense training sessions and/or competitions). The optimal sports diet is at least 60% carbohydrates. When you're traveling, you can very easily consume a 40-50% carbohydrate diet, since fatty foods are convenient, inexpensive and often tempting. Hence, you have to carefully choose to eat at appropriate restaurants, bring with you wholesome snacks and make special requests at restaurants or fast-food chains.

The following menus are sample sports meals that offer at least 60% carbohydrates. Some of the food items (such as soft drinks and milk shakes) are not generally recommended as a part of an optimal daily diet, but they can be incorporated into a meal-on-the-road from time to time. The purpose of these sample meals is simply to offer the concept of what a 60+% carbohydrate diet "looks like", so that you can use it to guide your food choices. The menus are appropriate for active women and men who need 2000-2600+ calories per day. You should adjust the portions to suit your individual appetite.

		Calories:Total	*From carbohydrates*	
BREAKFAST SUGGESTIONS				
McDonald's/Fast Foods:	Orange juice, 6 oz	85	80	
	Pancakes, syrup	420	360	
	English muffin, jelly	155	120	85% carbohydrates; 660 calories
Muffin House, Bakery	Bran muffin, large	320	205	
	Hot cocoa, large	180	100	60% carbohydrates; 500 calories
Family Restaurant:	Apple juice, large	145	145	
	Raisin bran, 2 sm boxes	220	200	
	Lowfat milk, 8 ounces	110	80	
	Sliced banana, medium	125	120	92% carbohydrates; 590 calories
LUNCH SUGGESTIONS				
Sub Shop:	Turkey sub, no mayo	655	340	
	Fruit yogurt, lowfat	260	200	
	Orange juice, half-pint	110	105	63% carbohydrates; 1025 calories
Wendy's/Fast Food:	Plain baked potato	240	200	
	Chili, 1 cup	230	100	
	Chocolate shake	390	220	60% carbohydrates; 1025 calories
Salad bar:	Lettuce, 1 cup	15	10	
	Green pepper, 1/2	10	8	
	Broccoli, 1/2 cup	20	15	
	Carrots, 1/2 cup	20	17	
	Tomato, large	50	45	
	Chick peas, 1/2 cup	170	120	
	Feta cheese, 1 oz	75	0	
	Italian dressing, 2 Tbsp.	100	0	
	Bread, 1" slice	200	180	60% carbohydrates; 660 calories
DINNER SUGGESTIONS				
Pizza:	Cheese pizza, 4sl. 13"	920	520	
	Large cola, 12 oz	150	150	63% carbohydrates; 1070 calories
Italian Restaurant	Minestrone soup, cup	85	60	
	Spaghetti, 2 cups	400	320	
	Tomato sauce, 2/3 cup	120	60	
	Parmesan cheese, 1 Tb	30	0	
	Rolls, 2 large	280	240	74% carbohydrates; 915 calories
FamilyRestaurant:	Turkey, 5 oz white meat	250	0	
	Stuffing, 1 cup	200	160	
	Mashed potato, 1/2 cup	95	60	
	Peas, 2/3 cup	70	60	
	Cranberry sauce, 1/4 c.	100	100	
	Orange juice, 8 oz	110	105	
	Sherbert, 1 scoop	120	110	64% carbohydrates; 945 calories

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FOODS HIGHEST IN CARBOHYDRATES

For better health and sports performance, you should choose wholesome, carbohydrate-rich foods for both your daily training diet and for pre-competition meals. Here are some suggestions:

Spaghetti, macaroni, noodles
Top the pasta with tomato sauce to add more carbohydrates. Be cautious of sauces made with lots of oil, meat, butter or cheese that contribute to "fat loading" rather than carbo-loading.

Rice
Steamed or boiled rice is preferable to Chinese fried rice which is saturated with oil and fat-calories. When possible, choose brown rice; it has more nutritional value than white rice.

Potato, sweet potato, yams
Limit fatty french fries but enjoy potatoes that are baked, boiled or mashed. Add moistness to a baked potato by mashing it with milk or topping it with plain yogurt in place of sour cream, butter or gravy.

Stuffing
A tasty, carbohydrate-rich change from pasta and potato. Store-bought stuffings are very quick and easy to prepare: just add hot water, and, if desired, some raisins and diced apples for extra carbohydrates.

Cous-cous, millet, bulgar, kasha, barley
Wholesome alternatives to the standard dinner starches. A creative addition to meals and casseroles.

Dried beans, lentils, peas
Chili beans, split pea soup, lentils, refried beans, baked beans, limas and other beans are excellent sources of both carbohydrates and *protein. Caution: Large portions may lead to digestive problems!*

Bread, rolls, tortillas
Try to choose hearty, whole grain products made from whole wheat, oatmeal, rye and corn in order to get more fiber and nutritional value than offered by refined, white flour products. Add butter sparingly, if at all, to breads so that you fill-up on carbohydrates and not the butter (fat).

Pretzels, air-popped popcorn, crackers
These low-fat snacks are preferable to greasy potato and corn chips. Stoned wheat crackers, Ry-Krisp and other wholesome, low-fat brands are preferable to Ritz, Wheat Thins, Triscuits and other crackers that contain significant amounts of oil and leave you with greasy finger-tips.

When making popcorn, use an air-popper or else pop the kernels in very little oil. Commercially bagged popcorn or the brands designed for micro-wave ovens generally contain at least half of the calories from fat. Even the "lite" brands can be deceptively high in fat and relatively low in carbohydrates.

Hot cereal
Whole grain cereals such as oatmeal, Wheatena and Maltex offer wholesome goodness. Cream of Wheat, although refined, is enriched with iron. Mix cereals (i.e. cook Wheatena with Cream of Wheat) or alternate brands throughout the week in order to boost your nutrient intake. Add raisins, banana, dried fruit, brown sugar or maple syrup for extra carbohydrates. Oatmeal and oatbran are particularly healthful choices; they may help lower blood cholesterol and protect against heart disease.

Cold cereal
Rather than puffed or flake-type cereals, choose the dense-types such as Grapenuts, Wheat Chex, Raisin Bran, Bran Flakes or Muesli. Fiber-rich brands can help protect against constipation. Add extra carbohydrates by topping the cereal with bananas, raisins and other fruits. Drink with orange juice to enhance iron absorption from the iron-enriched brands such as Total, Wheat Chex, Wheaties, Raisin Bran.

Bagels, muffins, corn bread, banana bread

For extra carbohydrates, spread with jam or honey rather than butter, margarine or cream cheese.

Pancakes, waffles, french toast

Top with additional carbohydrates such as maple syrup, blueberry sauce, honey, applesauce or jam. Use butter or margarine sparingly, if at all.

Fruit

Dense fruits such as bananas, pineapple, raisins, dates, apricots and other dried fruits offer more carbohydrates than watery fruits (such as grapes, plums and peaches). Don't try to carbo-load on too much fruit; you may end up with diarrhea!

Juice

Apple, pineapple, cranberry, cran-raspberry, grape, apricot nectar and other fruit nectars offer more carbohydrates than orange, grapefruit and tomato juices. You can increase the carbohydrate-value of frozen orange juice by simply diluting it with less water than the directions suggest. Fruit smoothies (made by mixing fruit and juice in the blender) are excellent, carbohydrate-rich drinks.

Desserts

Although many desserts such as cheesecake, ice cream and rich cookies are made with lots of cream, butter and shortening (and thereby have a high fat content), you can carbo-load on lower-fat (and more nutritious) alternatives such as apple crisp, blueberry cobbler, angel cake, date squares, fig newtons and oatmeal raisin cookies.

Frozen yogurt, ice milk, sherbert, sorbet, juice bars

These high carbohydrate choices are preferable to ice cream. If you must *have ice cream, remember that the less expensive brands have more carbohydrates and less fat than high-priced gourmet varieties.*

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Sugars and carbohydrates with little nutritional value

Fueling-up on concentrated sweets and carbo-powders is the equivalent of putting gas in a car but neglecting the spark plugs (vitamins and minerals). Although refined sugars do fuel the muscles, they lack nutritional value. If desired, eat the following sweets in moderation and in addition to other wholesome foods.

Lemonade, Kool-aid, soft drinks and other sweetened beverages
Jelly beans, gum drops, gummy bears, marshmallows and other low-fat sweets
Honey, brown sugar, jam, jelly, maple syrup
Commercial carbohydrate powders and drinks (such as Gatorlode or Exceed High Carbohydrate Drink)

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THE PRE-COMPETITION MEAL

When it comes to pre-competition eating, each person has individual food preferences or aversions. Hence, no one single food or "magic meal" will ensure top performance. Whereas some athletes (runners or those in sports involving running and jumping) often prefer to eat nothing before competition, others (cyclists, skiers) may perform better after having eaten a light snack (50-200 calories) or small meal (300-500 calories). The following guidelines offer points to consider regarding your own personal pre-exercise eating program. Since each person is unique, you should experiment to learn which foods (if any) and how much of them work best for *your* body.

- The pre-competition meal / snack helps to:
  1. maintain a normal blood sugar and prevent the performance problems associated with hypoglycemia (light-headedness, blurred vision, needless fatigue and indecisiveness).
  2. settle the stomach, absorb some of the gastric juices and abate hunger feelings.
  3. provide energy to fuel the muscles.

The goal of the pre-competition meal is to enhance stamina and endurance without causing any stomach discomfort. Eating too much food can have adverse effects (nausea, stomach cramps); so can eating too little (lack of energy). Athletes who get very nervous, stressed or have sensitive stomachs may prefer to abstain completely from food. They should make a special effort to eat extra food *the day before* to be well fueled for the competition.

- Carbohydrates are the best pre-competition foods because they digest quickly and are readily available for fuel. Some popular choices include cereal, bread, bagel, crackers, potato and pasta. Protein-rich foods (eggs, tuna, steak) take longer to digest and may increase the need to urinate. Fats (fried foods, peanut butter, greasy burgers) stay longest in the stomach and may feel heavy and uncomfortable.

- Pay attention to meal timing. In general, you should allow 3-4 hours for a large meal to digest; 2-3 hours for a smaller meal, 1-2 hours for a blenderized meal (liquids are absorbed more rapidly than solid foods), 0-1 hour for a small snack. Always eat extra carbohydrates the day prior and do little or no exercise so your muscles can refuel.

With **morning events,** eat a hearty, high carbohydrate dinner and bed-time snack the night before. That morning, if tolerated, eat a light meal (such as 1-2 slices of toast and/or cereal) to stabilize your blood sugar, absorb some of the gastric juices and keep you from feeling hungry.
With **afternoon events**, eat a hearty breakfast and a light carbohydrate-based lunch.
With **evening events**, eat a hearty breakfast and lunch, then perhaps a light snack 1-2 hours prior.

Some athletes break all the rules and can handle a big meal with no problem within an hour of the event. Others can eat nothing for four hours prior. *You simply have to experiment during training* to determine what foods (if any) settle comfortably, when you should eat them (one, two or three hours prior?) and how much you can eat.

- Always eat familiar foods prior to competition -- don't try anything new! Experiment with new foods *during training* to determine if they settle well, cause "acid stomach", gas, heart burn, cramps or intestinal discomfort.

- One pre-event meal inadequately compensates for a poor training diet. Hence, you should eat a high carbohydrate diet *every day* to prevent chronic glycogen depletion and ensure adequate glycogen replacement.

- When traveling, you might want to bring your favorite pre-competition food such as a tried-and-true cereal, muffin, fruit or sandwich. This way, you can be worry-free about food and better able to focus on performing.

- The pre-competition meal may have a greater *psychological* than physiological value. For example, if you firmly believe that a steak dinner helps you perform best, then eat it even though this meal "breaks the rules" regarding pre-game suggestions! You also might want to experiment during training with pasta or another high carb, low fat choice to see if this more appropriate food settles better and offers an energy advantage.

Sample high carbohydrate, low fat pre-competition food suggestions:
Breakfasts: cereal, lowfat milk, banana; toast, juice; muffin or bagel, yogurt; french toast or pancakes, syrup.
Lunches: sandwich with thick bread, little mayo; soup, crackers; thick-crust pizza (single cheese, no meat).
Snacks: crackers, bagel, toast, canned or fresh fruit, banana bread, yogurt, small turkey sandwich, biscuit.
Dinners: spaghetti, tomato sauce; extra rice, noodles, potato, vegetables with small serving of chicken, fish.

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FLUIDS, DEHYDRATION and THIRST QUENCHERS

Drinking adequate fluids is essential for top athletic performance. Body fluids have important jobs: fluid in the blood transports glucose to the working muscles and carries away lactic acid; urine eliminates waste products; sweat dissipates heat via the skin. If you sweat heavily and lose too much fluid, you reduce your ability to provide adequate circulation to both the muscles and body surface. This not only hurts your performance but also can endanger your health.

Unfortunately, many people who exercise pay too little attention to including adequate fluids in their sports diet. They suffer needless fatigue and perform sub-optimally. The following tips may help keep you well hydrated.

Prevent dehydration during training.

On a daily basis, make sure that you drink adequate fluids. You can easily determine if you've had enough to drink by monitoring the amount and color of your urine.

--You should urinate frequently throughout the day.
--The urine should be a clear, lemonade color, and in significant quantity.

If the urine is dark, concentrated and scanty, you need to consume more water, juice and other fluids.
(Note: If you take vitamin pills, your urine may be dark colored. Monitor hydration by the *quantity* of urine and *darkness* of color.)

- To increase awareness of sweat losses during exercise, weigh yourself before and after a hard workout. Each pound lost represents one pound (two cups) of sweat. Replace it accordingly -- and try to lose less than 2% of your weight!
- You don't have to drink *only* water for fluids. Juice, lemonade, soft drinks and watery foods such as soup, oranges, lettuce, yogurt and melon all have a high water content that contributes to your overall fluid balance.
- Be aware that coffee, tea, beer and alcohol have a dehydrating effect; they cause you to urinate and lose fluids. Hence, if you choose to drink beverages with alcohol or caffeine, do so after having quenched your thirst with other fluids. I.e., *first* drink two or three large glasses of water, then have a beer if desired.

Prior to hard endurance exercise:

1. The day before, drink extra water, juice and other fluids to be sure your body is well hydrated.
2. The morning of the event, drink 2-3 large glasses of fluids up to two hours prior to the start. Since the kidneys require about 90 minutes to process liquids, two hours allows time for you to empty your bladder before the start of the event.
3. Five or ten minutes before start-time, "tank up" on another 1-2 cups of water. This will be ready to replace sweat losses.

During hard exercise:

1. Drink as much as you can, ideally 8-10 ounces every 20 minutes, or as much as you can tolerate. Since you may be sweating off three times this amount, you may still have a fluid deficit.
2. *Prevent* dehydration by taking adequate fluids (water, sports drinks or diluted juice) early in the event. Drink *before* you get thirsty! By the time your brain signals thirst, you will have lost 1% of your body weight (1.5 pounds or 3 cups of sweat for a 150 pound person). By 2% dehydration (3 lbs.), you may have reduced your work capacity by 10-15%.

After exercise:

1. Drink to quench your thirst, and then drink even more. Since the thirst mechanism inadequately indicates whether or not you've taken enough fluids, you'll have to tell by monitoring your urine. If several hours pass without your having to urinate, you are still dehydrated. Keep drinking...
2. Juices (especially orange or banana/orange blend) replace not only fluid but also carbohydrates and potassium. Two or three cups within one hour post-exercise can help you quickly recover from a tough workout.

Water vs. Sports Drinks: For the recreational athlete, water is always appropriate. Water is what your body needs and absorbs quickly. For endurance athletes or those expending large amounts of energy for more than ninety minutes, a sports drink, dilute juice or soft drink that contains 60-80 calories per 8 ounces offers an energy advantage during exercise that can enhance stamina and endurance. Experiment *during training* to learn which fluids settle best in your stomach.

Electrolyte Replacement: Sweat contains not only water but also small amounts of sodium, potassium and other electrolytes that keep your body in fluid-balance. You lose small amounts of these electrolytes when you sweat, but you do not deplete yourself except possibly under extreme circumstances. Hence, you can easily replace the losses after exercise by eating fruit, juice, yogurt and other wholesome foods. Commercial fluid replacement drinks are generally weak sources of electrolytes compared to natural fruits, juices and recovery foods. Water plus wholesome foods do a great recovery job!

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HOW TO LOSE WEIGHT AND MAINTAIN ENERGY

If you continually yoyo on and off diets, you need to acknowledge the fact that diets *don't* work! In order to lose weight healthfully and keep it off, you should look at your *eating*. After all, eating contributes to weight-problems ... particularly the *over*-eating that commonly occurs after blowing a strict diet.

Strict diets teach you willpower. Strict diets leave you feeling deprived of one of life's pleasures - food. Rather than *diet*, you should learn how to healthfully eat *diet portions* of any food that you currently enjoy and would like to eat throughout the rest of your life. Healthful eating offers more long-term success than crash dieting. Healthful eating also ensures adequate vitamins, minerals, protein and carbohydrates -- the nutrients you need to exercise at your best.

The following tips can help you successfully lose weight *plus* have energy to train hard and exercise at your best. Expect to gradually lose weight at a realistic rate of one-half to three pounds per week depending on your body size and total amount of fat you have to lose.

Twelve Steps for Successful Weight Reduction

#1. Write down what you typically eat in a day then evaluate your meal patterns and eating habits. Do you nibble all day? Devour huge dinners? Munch-out at night? Over-eat when you are: hungry? tired? stressed? nervous? bored?

Think about your mood. If you really need a hug and *human* comforting, don't turn to food. No amount of food will satisfy you. Food is only fuel. It will not resolve your problems.

#2. Become aware of *when* you eat. If you eat very few calories during the day but then over-eat at night, experiment with eating a bigger breakfast, lunch and a planned afternoon snack. You will be less hungry at night and will easily be able to eat a lighter dinner. By giving yourself permission to eat more calories during the day, you will not only burn off those calories, you will also prevent yourself from getting *too* hungry. Generally speaking, once you are ravenously hungry, you don't care about *what* you eat nor *how much* and can too easily over-eat.

#3. To *very roughly* estimate the number of calories needed to maintain your current weight:

- Multiply your desired weight by 10 to determine your *resting metabolic rate* (the amount of calories you need to simply lay in bed all day and breathe). For example, if your target weight is 120 pounds, your resting metabolic rate is about 1,200 calories. You burn off these calories even if you are injured or taking a rest day from exercise.

- Add another third to half of that number for your general daily activity *excluding* your specific training or exercise program. If you are active during the day (i.e. going up and down stairs, walking around, doing errands), you will burn off more calories than if you are mostly sitting, studying, or working at a desk. For example, a 120 pound mother with three children is quite active and may need about: 1,200 calories (resting metabolism) + 600 calories (general activity) = 1,800 calories (without exercise).

- Next, add on calories burned off during your exercise program. Here is the calorie expenditure for some popular sports, based upon *weight* and *calories burned per minute* of activity:

Activity	110	130	150	170 lbs body weight	
Biking, 13 mph	8.5	10.0	11.5	13	calories burned per minute
Running, 8 min/mile	10.8	12.5	14.2	16	
Squash	10.6	13.1	14.4	17	
Swimming, hard	7.8	9.2	10.6	12	
Walking, normal pace	4.0	4.7	5.4	6.2	

From: *Nutrition, Weight Control and Exercise*. F. Katch & W. McArdle, Lea & Febiger 1988

NOTE: This is a *rough estimate* of your calorie needs. You may burn more calories or fewer calories, depending on many factors unique to your body. For example, fidgeters need more calories than mellow folks! A registered dietitian can help you more accurately determine your actual energy needs.

#4. Subtract 20% of your maintenance calories to determine an appropriate calorie target for weight loss. For example, if you maintain your weight on about 2,000 calories, you should plan to lose weight on about 1,600 calories. Note that petite athletes (i.e. skaters, gymnasts, dancers) will subtract fewer calories than bigger athletes (football players, body builders). If you cut back more than 20%, you will likely become ravenously hungry and put yourself at high risk of blowing your diet *again*...

#5. Organize your eating into a realistic plan. For example, divide your 1,600 calorie diet into three meals plus snacks, such as 500 calories for breakfast, 500 for lunch, 100 for afternoon snack, 500 for dinner. Try to eat the majority of the calories *during the day,* so that you will have energy to exercise at your best. By eating during the day, you will be able to (easily) eat less at night, because you will be less hungry.

Remember: you will *not* gain weight by eating a substantial breakfast or lunch. You *will* gain weight, however, if you skimp on these meals, get too hungry and then over-eat during the evening...!!!

#6. Eat slowly. Over-weight people tend to eat faster than their normal-weight counterparts. Your brain needs about 20 minutes to receive the signal that you've eaten your fill. No matter how much you consume during these twenty minutes, the satiety signal won't move any faster. Hence, you should try to pace your eating. Practice putting down your fork between bites rather than eating non-stop.

#7. Once a week, give yourself permission to have a treat such as a piece of birthday cake or a special Sunday breakfast. This will give you incentive to be "good" when tempted at other times. When enjoying this treat, don't quickly stuff it into your mouth. Rather, eat it slowly to fully enjoy the taste. After all, the best part about food is the taste.

#8. Keep away from food sources that tempt you. For example, read the newspaper in the living room rather than the kitchen. Avoid jogging past the bakery. Stand away from the buffet table at a party. By keeping the food out of sight, you will be more likely to keep it out of mind -- and out of your mouth!

#9. If you tend to eat because you are bored, stressed, tired or lonely, make a list of ten non-food activities that you can do instead of eating: water the plants, take a bath, call a friend, write letters, go for a walk, go to sleep, etc.. If you are stressed, take steps to resolve the *real* problem and recognize that *no* amount of food will resolve the stress. Learn how to handle stress and anxiety *without* over-eating.

#10. Think thin. Every morning before you get out of bed, visualize yourself as being thinner. This will help you start the day with a positive attitude. Continually remind yourself that you would rather be thinner than over-eat.

#11. Measure success by looking at yourself naked in the mirror. If you see - and pinch - less fat, you *have* less fat! If you weigh yourself, do so first thing in the morning after you have gone to the bathroom and before you have eaten. Don't weigh yourself after a workout or at night -- that gives a false weight!

#12. Be proud of your success and keep reminding yourself that when you eat well, you not only feel better, but you also feel better about yourself. Plus, you have enough energy to exercise and enjoy life.

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HOW TO HANDLE EATING DISORDERS

Advice for Coaches, Friends, Parents

If you think that an athlete is struggling with food issues, speak up! Anorexia and bulimia are self-destructive eating behaviors that may signal severe underlying depression and can be life-threatening. Here are some tips for approaching this delicate subject:

- **Heed the signs**. Anorectic behavior includes extreme weight loss (often emaciation), obsessive dieting, compulsive exercise, spartan food intake despite significant energy expenditure, distorted body perception (i.e., frequent comments about feeling fat despite obvious thinness). Anorexics commonly wear layers of baggy clothing to hide their thinness and may complain about feeling cold.

  Bulimic behavior can be more subtle. The athlete may eat a great deal of food and then rush to the bathroom; you may hear water running to cover-up the sound of vomitting. The person may hide laxatives and display other secretive behavior. Petty stealing of money for food is common among team-mates. The bulimic may have blood-shot eyes, swollen glands and bruised fingers (from inducing vomitting). Some even speak about a magical method of eating without gaining weight.

- **Approach the athlete gently** but persistently, saying that you're worried about his/her health. Share your concerns about their lack of concentration, light-headedness or chronic fatigue. These health changes are more likely to be stepping stones for accepting help, since the athlete undoubtedly clings to food and exercise for feelings of control and stability.

- **DON'T discuss weight or eating habits.** The athlete takes great pride in being "perfectly thin" and may dismiss your concern as jealousy. The starving or binge-ing is not the important issue, but rather a smoke screen over the larger problem. Problems with *life* are the real issue; problems with food are the symptom.

- **Focus on unhappiness as the reason for seeking help.** Point out how anxious, tired, and/or irritable the athlete has been lately. Emphasize that s/he doesn't have to be that way.

- **Be supportive and listen sympathetically** but don't expect the athlete to admit s/he has a problem right away. Give it time. Remind the athlete you believe in him/her. This will make a difference in the recovery.

- **Give a written list of sources for professional help**. Although the athlete may deny there's a problem to your face, s/he may admit despair at another moment. If you don't know of local resources, two likely national organizations include:

  -- *American Anorexia/Bulimia Association*, 418 East 76th St., New York, NY10021. (Send self-addressed stamped envelope) Phone: 212-734-1114. AABA offers a national referral service, self-help groups and information on eating disorders.

  -- *National Association of Anorexia Nervosa and Related Disorders* (ANAD), PO Box 7, Highland Park, IL 60035. (Enclose $1 postage and handling.) Information and Crisis Hotline: 708-831-3438. ANAD runs a nationwide system of free support groups and referral list of psychotherapists.

- **DON'T deal with it alone.** If you feel you're making no headway and the athlete is becoming more self-destructive, seek help from a trusted family member, medical professional or health service. Make an appointment with a mental health counsellor and bring the athlete there yourself. Tell the athlete that you have to involve other people because you care about him/her. If you are over-reacting and there really is no problem, this health professional will simply be able to ease your mind.

- **Talk to someone about your own emotions** if you feel the need. Remember that you are not responsible and can only try to help. Your power comes from using community resources and health professionals such as a guidance counsellor, registered dietitian, member of the clergy, or an eating disorders clinic.

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